THE IRON TRADE REVIEW

Volume LIII CLEVELAND, JULY 3, 1913 Number 1

Buying of Pig Iron at Very Low Quotations

Includes Some Tonnages of Good Size—Downward Tendency in South Apparently Checked—Coke Producers Holding for $2.50

BY GEORGE SMART

The first half of the year has made a remarkable record for production and consumption and very little new buying. A year ago, the second half of the year opened under highly favorable conditions, with general confidence in continued prosperity. Specifying against contracts expiring July 1 continued at a tremendous rate up to the very last minute of that day. Advances in leading finished products had just been announced. Conditions have, of course, changed, and there has been no rush to specify during the past few days. There is, however, no indication of decreased consumption, and there is much reason for believing that new business will develop satisfactorily during the last half of the year. In cases where there have been cancellations, they have been almost invariably due to the fact that users of various materials found that by cancelling contracts with leading makers they could get more satisfactory delivery from other mills.

Pig Iron

The outlook for pig iron is better in most sections, on account of increased demand, but prices are still very low. In the south, the extremely low quotations recently made have disappeared and prices are on a firmer basis with considerable iron being sold at as high as $11. In eastern territory, following the buying of from 12,000 to 15,000 tons by the General Electric, and 25,000 to 30,000 tons by the United States Cast Iron Pipe & Foundry Co., there has been more activity and about 35,000 tons are now pending in the New York district. A feature of the eastern buying has been the placing of orders by the railroads for only a fraction of the tonnage inquired for. At Pittsburgh, a sale of 30,000 tons of pig iron is persistently reported and it is believed that there has been considerable quiet buying.

Government Colliers

Bids on the government colliers Kanawha and Maumee developed considerable competition, in which the eastern mills had a distinct advantage, owing to the fact that their freight rate is about $5 less to Mare Island, Cal., than is that of the Pittsburgh mills. The Worth Bros. Co., Coatesville, is the low bidder on 5,500 tons of plates, on which it bid 1.40c, Coatesville, on 4,500 tons, and asked extras on the additional 1,000 tons. On the 1,600 tons of structural shapes, the Carnegie Steel Co. and the Jones & Laughlin Steel Co. each bid 1.45c, Pittsburgh. Eastern Pennsylvania mills are now quoting 1.50c, Pittsburgh, for either eastern or western shipment on plates.

Structural Material

The Ford Motor Co., Detroit, will build additions to its Detroit plant, which will call for about 18,000 tons of steel, the contract for 3,400 tons of which has been awarded to the McClintic-Marshall Construction Co. Owing to the railroads accepting the proposition of Cleveland city officials in regard to the site for the new Union station, it is expected that the drawing of plans for this monumental structure will soon be started. Bids will be opened July 17, on section one of the Welland canal improvement, which will require about 5,000 tons of reinforcing bars and structural material.

Store Prices

Following the action of the Illinois Steel Co. in reducing its warehouse prices of shapes, plates and bars $2 per ton, the jobbers in Cleveland and Cincinnati took similar action. The reduction on plates and shapes in the Cleveland market was $3 per ton. These concessions undoubtedly represent some decline in business, particularly in the Chicago district. The jobbers feel that as they are not now compelled to pay premiums, which they did pay for a time for prompt delivery, they can afford to make some price concessions to buyers. The jobbing business in most sections has continued very active.

Coke

An eastern consumer has purchased 4,000 tons of prompt furnace coke at $2.15, ovens, and it is reported that another eastern consumer has closed for its requirements for the last half, while still another eastern furnace has bought 15,000 tons for last half, and one company is credited with 10,000 tons. While it is intimated that $2.50 has been shaded on last half contracts, the ovens seem to be holding firmly for that price, and in the Pittsburgh district, some 60,000 tons of prompt furnace coke has been sold at $2.50.

Scrap

In spite of the recent declines in prices of old material, still further concessions have been made in several markets and some remarkably low prices are now being quoted. Railroads are having considerable difficulty in moving their accumulations.

Iron Ore Holdings of Corporation Not Adequate

Will Be Claim of Defendant in Dissolution Suit When Hearings Are Resumed in October—Former Commissioner Garfield Tells About Results of His Investigation

The hearings of witnesses for the defense in the government's suit for the dissolution of the United States Steel Corporation were adjourned last Thursday for the summer. They will be resumed in New York on or about Oct. 1.

At that time, the portion of the government's petition referring to the Steel Corporation's ore holdings will be taken up in detail. Counsel for the defense will call a large number of witnesses in this connection and will endeavor to prove by their testimony that the Steel Corporation, instead of acquiring ore properties in excess of its requirements, as the government sets forth, did not actually purchase enough to fortify itself against future necessities; also that the Steel Corporation never purchased ore properties in the Lake Superior district for the purpose of preventing the acquisition of these properties by its competitors.

Last week's witnesses were, Arthur L. Davis, eastern contracting manager of the American Bridge Co. of New York; Edward M. Hagar, president of the Universal Portland Cement Co.; William C. Temple, formerly commissioner of "pools"; Charles MacVeagh, general solicitor of the Steel Corporation; Lewis Cass Ledyard, New York lawyer; C. K. Winslow, statistician in the comptroller's office of the Corporation; George Gordon Crawford, president of the Tennessee Coal, Iron & Railroad Co., and James R. Garfield, formerly commissioner of corporations and a member of the Roosevelt cabinet.

Counsel for the defense in the dissolution suit, in the series of hearings just closed, covered a great many of the points at issue in the case. The following are the more important facts which it has been sought to develop up to the present:

That the Steel Corporation was formed for the purpose of effecting important economies in production; developing the export trade; bettering the conditions of workmen, etc.

That the syndicate which formed the Steel Corporation bought the companies which became its subsidiaries at the lowest price possible, and that the capitalization of the Steel Corporation was made no larger than was necessary.

That in forming the Corporation there was no intention in any way to create a monopoly or restrain trade, and that no attempt has been made since to obtain a monopoly in any department of the industry; also that the percentage of the country's producing capacity held by the Corporation has steadily decreased in all branches since 1901.

GEORGE G. CRAWFORD, PRESIDENT TENNESSEE COAL, IRON & RAILROAD CO., WHO TESTIFIED AS TO IMPROVED CONDITIONS AT THE PLANTS OF THE COMPANY

That the Corporation has always refused to countenance "pools" and that the subsidiary companies were ordered to withdraw from price agreements when it was learned that they were parties to them.

That no price agreements or other agreements were entered into at the "Gary dinners".

That the Corporation acts as a great steadier of business, tending to prevent extreme price fluctuations; that it tends to promote healthy competition.

That the policy of the Corporation in dealing with its competitors, its customers and its employes has resulted in great good to all concerned.

That the Corporation has never favored one customer at the expense of

(*Cont'd on p.* 44)

WORTH BROS. LOW

In Bidding on Plates For Government Colliers.

The Worth Bros. Co. is the low bidder upon approximately 5,500 tons of steel plates asked by the government for Mare Island, California, delivery for use in the construction of the two naval colliers Kanawha and Maumee. This maker bid 1.40c, Coatesville, upon the principal item of about 4,500 tons of plates and asked extras upon the additional 1,000 tons of various classes. The delivery specified by the government was 90 days. The Worth company offered to furnish the material in 10 to 20 days if so desired, at 1.50c, mill.

The Lukens Iron & Steel Co., with a flat bid of 1.45c, Coatesville, for all classes of plates, was slightly above, in the total, that of the Worth company. The other bids entered upon the plates were: Carbon Steel Co., 1.42½c, Pittsburgh; Carnegie Steel Co., 1.45c, Pittsburgh; Jones & Laughlin Steel Co., 1.45c, Pittsburgh.

Upon the 1,600 tons of structural shapes required for the colliers, the Jones & Laughlin Steel Co. are equally low at 1.45c, Pittsburgh. The Phoenix Iron Works submitted a tender of 1.50c, Phoenixville, upon this business.

At the first opening of the steel bids for the two colliers, some weeks ago, the Lukens Iron & Steel Co., upon the plates, and the Jones & Laughlin Steel Co., upon the shapes, were apparently low. Some question as to the figures was raised and the material was re-advertised.

Will Give Attention to Texas Ore

Wesley Merritt, industrial commissioner of the Atchison, Topeka & Santa Fe railroad, with headquarters in Chicago, resigned July 1 to devote his attention to the development of iron ore deposits in Texas. He will be located at Longview, Texas. Mr. Merritt has been active as a representative of the Santa Fe in the development of the East Texas Brown Ore Development Co., from the properties of which shipments of ore are about to be inaugurated to the eastern market.

Will Argue Ore Case

C. Louis Weeks, assistant attorney general of Minnesota, has gone to Duluth to argue for an amplification in the findings in the suit of the state against Eliza Koerer and others in regard to the ownership of valuable iron ore rights in the bed of Longyear lake, near Chisholm, Mesabi range. The lower court held that the state has no claim to iron ore lying in lake beds and the case has been appealed. Mr. Weeks desires changes made in the law findings, to make the case more clear on appeal. Should the state finally win, it will claim title to all iron ore in lake beds on the Minnesota ranges. It is said that Embarrass lake alone covers 25,000,000 tons of merchantable ore.

ANOTHER EXTENSION

Of Steel Works of Bethlehem Steel Co. Is Up For Bids.

Plans have been issued and figures are being taken for the new No. 3 steel works of the Lehigh plant of the Bethlehem Steel Co., South Bethlehem, Pa. The plans provide for the installation of open-hearth Bessemer and electric steel-making equipment, including six 50-ton open-hearth furnaces, a 20-ton Bessemer converter and two or three electric furnaces. These furnaces, in the main, will be employed for the making of special alloy steels.

These extensions of the steel-making capacity of the Lehigh plant will provide steel for the new merchant mills of the company, contracts for which were taken recently. As previously announced, the new mill department will comprise a two-high reversing 32-inch blooming and continuous mill, a four stand 22-inch mill, a 16-inch and 12-inch combination mill, a 12-inch and 8-inch combination mill and a 10-inch guide mill. A special feature of this new mill layout will be the application of electricity to all drives.

It is estimated that about 4,000 tons of structural steel will be required for the buildings for the new steel works. Bids for this construction are to be taken July 10.

Will Have Good Furnaces

New York, July 2. (By wire.)—The electric furnaces which the Bethlehem Steel Co. will install in connection with extensions to its steel capacity at the Lehigh plant will be the Girod type. Three furnaces will be in the plant.

The Cincinnati office of the Detroit Copper & Brass Rolling Mills, which is in charge of F. W. Farnsworth, has been moved from 506 Mercantile Library building to larger quarters at 1,001 in the same building.

STILL DECLINING

Are Prices of Bessemer and Basic—Comparison With Last Year.

Steel making pig iron continues to decline, as monthly reports of W. P. Snyder & Co., Pittsburgh, indicate. In June, on sales involving 1,000 tons or more, Bessemer averaged $16.2375, or $0.5425 less than the level established in May. Basic averaged $14.50 in June, or $0.389 less than the level of the preceding month.

During the first six months of 1913, Bessemer and basic averaged $16.9625 and $15.654, respectively. The Bessemer figure is $2.8182 and the basic figure $2.892 above those showing averages the first six months of 1912.

Figures alone indicate the market the first half of this year was stronger than that of the corresponding period a year ago. It is true that steel making pig iron has been on a higher level this year, but prices have been steadily declining. Last year, pig iron advanced from a level of comparatively low quotations to one of higher prices. Dealers believe, however, that no lower figures will appear.

Averages the first six months of this year follow:

STEEL MAKING PIG IRON MONTHLY AVERAGES 1913

(Average Prices, at Valley Points.)

Month.	Bessemer.	Basic.
January	$17.25	$16.45
February	17.25	16.317
March	17.25	16.059
April	17.068	15.714
May	16.78	14.889
June	16.2375	14.50
Average, first half	16.9625	15.654

Inspect Mining Lands

Officials of the Jones & Laughlin Steel Co., Pittsburgh, are inspecting its iron ore properties in Minnesota. The party includes B. F. Jones Jr., president; H. M. Laughlin, vice president; W. L. Jones, general manager, and D. M. Philbin and E. F. Brandt, who are in charge of the properties. Special attention was given to the new properties south of Grand Rapids on the western end of the Mesabi range where drilling operations are in progress.

Shipments From State Mines

The Grant mine on the Mesabi range shipped 742 cars of iron ore last week, breaking the record for shipments from a state mine. Shipments from state mines are on a larger scale, averaging 100,000 tons per week, the royalties being $112,000 a month.

Coke Firmly Held in Pittsburgh Market

But Furnace Operators Object Strenuously to High Prices—Finished Material Specifications in June About Equal to Those of May

BY C. F. WILLIAMS

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg.,
Pittsburgh, July 1.

Specifications against contracts in June were almost equal to those received in May, except for plates and shapes, in which some mills report a considerable falling off in demand. Mills continue to run at full capacity, and many of them have enough orders to assure maximum operation through the last half; little new buying is being done, however, and some cancellations have been made. Fundamentally the market is strong, but there is not the activity and demand that marked the beginning of the second half a year ago. Coke has reflected surprising strength; pig iron shows some improvement, but price shading continues in sheets, wire products and some of the lighter materials.

Pig Iron.—With coke operators demanding $2.50, ovens, for contract coke, furnacemen declare they cannot operate profitably with pig iron selling at the low figures prevailing today. Persistent rumors are heard that a melter in this district has secretly obtained 30,000 tons of pig iron and it is believed that several negotiations are being closed quietly in order not to disturb attractive prices. Dealers feel confident that basic cannot be had at less than $14.75, valley, and No. 2 foundry appears firm at $14. No sales of importance are noted.

Ferro-Alloys.—The market is seasonably quiet and no sales of consequence are reported. Prices remain unchanged.

Plates.—Bids on government colliers for the Pacific indicate that mills in this district, with one exception, are holding plates at 1.45c. A bid of 1.42½c on the plates involved was submitted by a local plant, but the Carnegie Steel Co. and the Jones & Laughlin Steel Co. refuse to shade 1.45c. Specifications against contracts last month were slightly lighter than those in May and some cancellations were made. Plates are obtainable at 1.45c for either prompt or forward delivery.

Sheets.—No new business is being experienced and consumers show an utter lack of interest despite low offers by some independent mills. Some mills are able to promise material in less than a month, but leading manufacturers are still a couple of months deferred.

Rails and Track Material.—June specifications for rails were almost equal to those of May. The last two weeks of June and the first two weeks of July usually are quiet in the rail trade and this year has proved no exception. Light rails are in fair demand. Spikes show no improvement, but other track fastenings are firm.

Billets and Sheet Bars.—Reports that sheet bars have sold at less than $27.50 are discredited by those who have made an investigation of the market. Principal makers with but few exceptions have sold practically all of their output for the second half at that figure. Billets are quoted at $26.50 to $27, but no traces of sales can be found.

Hoops and Bands.—Specifications did not fall off to any great extent last month, but new orders were extremely light. Hoops and bands are firm. This year's cotton tie price has not yet been established, although mills are making heavy shipments to warehouses in the south.

Iron and Steel Bars.—Steel bars are decidedly firm at 1.40c and reflect more strength than shapes and plates. Iron bars remain unchanged and shafting is held at 60 per cent off for carloads.

Muck Bar.—Muck bar continues to be quoted at $31, Pittsburgh.

Bolts, Nuts and Rivets.—Several manufacturers say specifications were more brisk last week than the preceding, but there is still chance for improvement. Prices are no stronger than a week ago, although less talk of shading is heard. Some mills are six and eight weeks deferred in rivet deliveries.

Structural Shapes.—Car builders did not specify heavily last month for either plates or shapes and June as a whole was not so good as May. Deliveries continue to improve but the 1.45c quotation is firm.

Iron and Steel Pipe.—Some mills refused orders recently, being unable to make desired deliveries; the fact that these orders were placed, however, indicates that a few makers are able to make much better delivery than a month ago. Less pessimistic talk is heard among the pipe makers than in other branches of the trade. Discounts are being held firmly.

Boiler Tubes.—Deliveries are somewhat better, although a few mills are still two months deferred. Quotations are being well maintained and specifying continues satisfactory.

Tin Plate.—No new developments are noted. Output of sheet and tin mills has showed the effects of the intense heat of the past week.

Wire.—Difference of opinion is expressed concerning the wire market. Better specifying is reported by some mills, while others say no improvement is noted. Prices continue weak and talk of a uniform decline is heard. Cut nails remain unchanged, being quoted at $1.70, Pittsburgh.

Wire Rods.—Tonnage continues to be sold at $29, Pittsburgh, although demand is slight. Open-hearth and Bessemer wire rods are quoted from $29 to $30.

Coke.—At least 60,000 tons of July furnace coke has sold at $2.50, ovens, and some special fuel for second half delivery has brought that figure. Consumers, however, contend pig iron prices do not warrant the asking price of coke and show no desire to buy for more than a month ahead. July 4 celebrations in the regions are expected to result in decreased output and higher prices. Demand for spot coke has been increased by activity of consumers who usually obtain West Virginia fuel. Furnace coke is quoted at $2.50 for both prompt and forward delivery. Foundry coke shows no change. The Connellsville *Courier* says production was 402,305 tons the week ending June 21.

Old Material.—Heavy melting steel has dropped 25 cents a ton and other grades continue weak. The embargo against the Jones & Laughlin Steel Co. has not yet been lifted.

The Neptune Meter Co., Long Island City, is planning a material enlargement of its plant. A building 75 x 175 feet, five stories in height, will be erected for machine shop purposes. A new foundry 100 x 200 feet will also be built. The new buildings will be of concrete construction.

The plant of the Hopson & Chapin Co., New London, Conn., will be closed permanently at the end of this month. The company made heating systems, engine cylinders and other castings.

Representatives of the iron molders' union and foundry owners at Youngstown, O., have fixed $3.75 as the minimum daily wage for nine hours.

Pig Iron is More Active in Chicago

One Illinois Consumer Buys 15,000 Tons—Agricultural Interests Contracting for Steel Bars—Store Prices Reduced

BY H. COLE ESTEP

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1521-23 Lytton Bldg.,
Chicago, July 1.

The closing week of the first half of the year witnessed a renewal of activity by agricultural interests that are now coming into the market for their yearly requirements. A heavy tonnage of bars was booked from this source, the termination contracts varying from the first of the year to July, 1914. An optimistic outlook is further encouraged by the appearance of a number of rail inquiries, including one from the Southern railroad for 28,000 tons. Specifications received from the mills continue very liberal and no cancellations of any material tonnages have been reported. While prompt delivery can easily be done on any finished material, the larger mills are maintaining their price schedules without difficulty and have sufficient business specified to run until some time in the fall. A reduction of $2 a ton in store prices on plates, shapes and bars has been made, however, which would seem to indicate a reduction in the demand for those materials out of store. Sheets, bolts, nuts, rivets, and wire products continue to be the weak spots in the western market.

Pig Iron.—During the last week of June inquiry in the Chicago district has been more brisk in spite of the maintenance of lower prices on both northern and southern iron. A western Illinois consumer has closed for about 15,000 tons of northern iron at a price understood to be on a basis of $15, f. o. b. Chicago furnaces, but sales of smaller lots have been made at $14.50. Current inquiries include one for 3,000 tons from the Greene Engineering Co. on northern specifications, and two for 1,000 and 1,800 tons, respectively, from nearby melters. Both northern and southern producers, who are willing to meet the lower prices in the present market have transacted considerable business during the past week.

In spite of the reports of heavy tonnages sold by Birmingham producers during the week immediately preceding on a basis of $10, Birmingham, no evidence is at hand that will justify a quotation on southern iron in this territory lower than $10.50, and while there are many indications of renewed activity at the present prices, it is not impossible that developments during the next week will result in the establishment of a lower basis, as buyers are not disposed to place their orders without assurance that they have the lowest prices obtainable. Northern iron is quotable at from $14.50 to $15, local furnaces, one Chicago interest holding firmly to the latter figure. This interest has booked much business during the last two months and has sold the larger part of the output of its two stacks that will remain in blast during the last half. Reductions in pig iron production in this immediate territory will consist of the blowing out of one Federal and one Iroquois stack in a few days.

Merchant Bars.—Agricultural interests that had been holding off are now coming into the market for their steel bar requirements and much business has been transacted at prices understood to be on a basis of 1.40c, Pittsburgh. The tonnage booked during the past week is very heavy. The duration of contracts varies, some terminating the first of the year and others July, 1914. The bar iron market is still dull, but no quotations lower than 1.50c, Chicago, have been justified and some producers are still holding to 1.55c, having sufficient business to run from six weeks to two months. Store prices are quoted at 1.85c for both iron and steel bars, a reduction of $2 a ton.

Plates and Structurals.—A considerable recession in store business in plates, shapes and bars has resulted in a reduction of $2 a ton in jobbers' prices. To what extent this will affect mill quotations cannot be foretold, but it is likely that some small mill orders will be held up in the hope of a like reduction in mill quotations. Specifications for plates and shapes are heavy, the total received being sufficient to keep local producers working at full capacity until sometime in the fall. Although there are some encouraging features in the present market, including a little railroad business, it is likely that the summer will be one of normal quiet.

Rails and Track Fastenings.—There has been a decided improvement in the demand for standard rails following the appearance of a number of inquiries involving large tonnages. These include one from a southern railway for 28,000 tons. Some of the larger western roads are also in the market. Thus far, however, the effect of this activity is not apparent in the market for track fastenings.

Bolts, Nuts and Rivets.—Rivets are, if anything, weaker, this tendency being also apparent in the market for bolts. The larger producers are endeavoring to maintain their price schedules, but smaller mills continue to shade considerably.

Sheets.—In view of prevailing conditions, such strength as exists in the market for this material is surprising. It is undoubtedly due to a maintenance of current quotations on the part of the larger producers in order to protect contract business. Jobbers continue to quote considerable activity in this material and store prices have not fallen off.

Wire Products.—New business is very light and in many quarters some price re-adjustments are expected on July 1. The leading interest, however, has business booked until Aug. 1, when the demand in normal years is generally resumed, and it is officially stated that is it not disposed to recede from its present position.

Cast Iron Pipe.—Aside from 2,000 tons of 48-inch water pipe for Cincinnati, which, as reported last week, was closed on the 27th, there is no especial activity apparent in this market. Business in small tonnages is some better, however, but larger municipalities are still troubled by a tight money market. On July 1 the city of Minneapolis offered $1,000,000 in bonds, a part of the proceeds of which will be used for water works extensions, and the results will be watched with interest.

Merchant Pipe and Tubes.—Business in merchant pipe and tubes is very quiet, but present prices are being maintained and, especially as regards steel tubes, are firm.

Old Material.—Further reductions have been made in scrap prices, based upon occasional sales, but on many items in the list prices are nominal, owing to the absence of transactions of any consequence. Railroads are having great difficulty in moving their accumulations and scrap consumers are buying just enough to keep prices on the down-grade and to keep up their stocks. In this way the time when buying to replenish stocks must begin is being postponed and there seems to be little hope of an early revival of activity, particularly as business in general will probably remain dull until September. The Great Northern has invited bids on 3,077 tons of scrap, which were closed on Monday, and the Northwestern has issued a list involving 3,096 tons. A list sent out by the Grand Trunk contains about 700 tons.

Cleveland Jobbers Reduce Store Prices

Following Action of Illinois Steel Co.—Heavy Movement of Iron Ore—Moderate Buying of Pig Iron

BY GEORGE SMART

Office of THE IRON TRADE REVIEW,
Penton Bldg.,
Cleveland, July 1.

Iron Ore.—Reports from all docks have not yet been received, but the outlook is that the movement for June will be about 8,000,000 tons, compared with 7,284,212 tons in May, and 7,567,555 tons in June of last year. Heavy fogs caused some delay to the fleet at various times during the month. New records are being constantly made in the ore trade, owing to the increased stages of water, and many of the 600-footers are carying about 12,000 tons per trip. The steamer William P. Snyder Jr. carried 12,222 tons from Duluth on her last trip. All docks are working at their greatest speed. Owing to the holidays Friday, and Sunday, special effort is being made to put the docks in good shape. Little chartering is being done and nearly all ore cargoes are being carried by contract vessels.

Pig Iron.—Buying has continued at a moderate rate, with low prices prevailing, and some furnace operators are beginning to talk of blowing out unless conditions improve. Most of the buying is for last half, although some is for July and August. There are no indications of decrease in the melt. An inquiry from England is pending for 500 tons under 1 per cent in silicon and 0.06 to 0.07 per cent in sulphur.

Coke.—Activity in contracting for foundry coke continues, with $3 as the usual price, although $3.10 is the Rainey price, and some grades can be had slightly below $3.

Finished Material.—Several of the larger companies are losing considerable tonnage in the way of cancellation of contracts and new business on account of being unable to give as prompt deliveries as are promised by other companies. There is, however, very little, if any, cancellation, which indicates a decrease in consumption. There are also very few suspensions, but in some cases, later dates for delivery are being substituted for earlier. Eastern plate mills are now freely quoted 1.50c, Pittsburgh, for western shipment, and on very desirable business, are willing to make 1.45c. Some of the eastern mills are very aggressive and will probably shade 1.45c, if necessary. Irregularities on wire products continue, but specifications are good. Some of the sheet mills are making concessions and show considerable anxiety to take orders. The iron mills have closed for two weeks. The steel plant of the Upson Nut Co. will also be idle for that time. The new open-hearth furnace of the Upson company is now ready to make steel.

There is brisk demand for light rails. There is also a very active demand for twisted reinforcing bars.

Following the action of the Illinois Steel Co. of reducing quotations on shapes, bars and plates, Cleveland jobbers reduced their prices on bars to 2c, a reduction of $2, and have reduced plates and shapes to 2.10c, a reduction of $3 per ton. The reason given for this reduction is that until recently jobbers were frequently compelled to pay premium prices for anything like prompt shipment, and now that the mills are giving comparatively prompt shipment, it is believed that the buyers are entitled to lower prices.

Old Materials.—The scrap market continued very quiet during the past week. Little business was transacted, only one of the large mills being in the market in this district. It is offering $11 per ton for heavy melting steel. Offerings of old material by producers are still very large, and dealers are laying up stock in their yards. Some dealers predict a prolongation through mid-summer of the dull period, but expect an upturn before fall, and feel that there will be good profits made in at least some varieties of scrap. The feeling seems general that the decline in pig iron and finished products has been sufficiently discounted and that the scrap market is near rock-bottom. Because of the lack of sales, quotations given are nominal.

The McElhatton Foundry Co. has purchased the foundry buildings at the southwest corner of Fifteenth street and Washington avenue, Philadelphia. The site is 47 x 110 feet.

The United States Metal Products Co. is erecting a two-story building, 50 x 175 feet, in Long Island City, to which it will move its New York office.

ST. LOUIS MARKET

Shows Fair Inquiry For Pig Iron—Slump in Old Material.

BY E. C. ERWIN

Office of THE IRON TRADE REVIEW,
St. Louis, July 1.

Pig Iron.—If all the talk about buying iron that is going on in the St. Louis territory should result in purchases, there would be something like 10,000 tons to be reported sold, but unfortunately this is not true. The most reliable of these near inquiries is one for 1,800 tons of southern No. 2 and No. 3 for last half delivery, and one for 1,500 tons of malleable, also for last half delivery. Sales are reported to have been made last week of 2,000 tons, consisting of Lake Superior charcoal and northern coke iron, all for delivery over July and August and the last half of the year. Southern No. 2 iron is quoted at $10.50 to $11, Birmingham basis; northern iron at $14.50 to $15, f. o. b. Ironton, and Chicago iron at $15, f. o. b. Chicago furnace.

Coke.—Coke is strong at $3 and up for Connellsville 72-hour foundry grades, and at $2.40 to $2.60 for 48-hour Connellsville furnace grades. Furnace coke is decidedly stiffer.

Old Material.—There has been a slump in scrap iron prices, due largely to a list for 3,000 tons put out by the Big Four railroad company, one for 3,000 tons from the Missouri Pacific and one for 300 tons from the New Orleans & Northeastern road. The market also has been seriously affected by the dumping in Chicago last week of 25,000 tons of scrap by various railroads. The mills are buying very little, and in fact the rolling mills have placed an embargo on scrap. Scrap dealers are showing very little tendency to take hold, and prices are softening. Relaying rails are in good demand, and the market seems to be destitute of them. One mill, the Helmsbacher, of the American Car & Foundry Co., will close this week for repairs, thus adding to the discomfiture of the market.

Cotton Tie Rate

Washington, July 2. (By wire.)—The Interstate Commerce Commission today entered an order granting the application of the Atlantic Coast Line and others to establish a commodity rate of 23 cents per hundred pounds on cotton ties from Virginia points to Birmingham and Montgomery, Ala., and Columbus, Ga. The old Birmingham rate was 25 cents and the Columbus rate 20 cents Montgomery had no cotton tie rate.

Eastern Buyers Are Still Cautious

Indications Are Favorable for Heavy Melt During Last Half—Good Prospects for New Business in Bars

BY C. J. STARK

Office of THE IRON TRADE REVIEW,
611 Bulletin Bldg.,
Philadelphia, July 1.

The close of the first half finds general evidence of conservatism as to the last half among buyers in eastern markets. In both the crude and finished materials, consumers are feeling their way. Continued heavy consumption is bringing out a larger pig iron tonnage. Eastern plates have weakened $2 a ton after months of even strength.

Pig Iron.—The market in eastern Pennsylvania appears somewhat more promising as new tonnage is expanding. The number of orders booked and the prompt delivery usually asked furnish encouraging evidence to the sellers of the unfilled position of many buyers for last half. All indications point to a well-sustained melt. The greater amount of the business is being done below the surface. One seller has booked very freely and is practically withdrawing. Prices, while not strong, seem less erratic. Northern No. 2X, Philadelphia, is quotably lower at a range of $15.75 to $16.25. Virginia iron remains freely quoted at $13.50, furnace. The Standard Cast Iron Pipe & Foundry Co. asks 5,000 tons of forge and No. 3 for July-August. At last reports, the Baldwin Locomotive Works had not closed for 2,000 to 4,000 tons of 2.50 to 3.25 silicon iron. The Southern railroad bought only 300 tons of Alabama grades at $11 basis, against an inquiry for 1,450 tons. A Virginia pipe maker asks several thousand tons. Some mill forge tonnage is in sight. One buyer of basic closed for several thousand tons for early delivery at about $15.50, delivered. A central Pennsylvania basic consumer asks for its third quarter needs, about 5,000 to 6,000 tons. A local buyer divided 500 tons of prompt malleable between an eastern Pennsylvania and a lake maker at $16.25, delivered, a new low price. Small lots of low phosphorus bring unchanged prices.

Coke.—An eastern consumer has purchased 4,000 tons of prompt standard Connellsville furnace coke at $2.15, ovens. Other eastern buyers have taken prompt lots. A Schuylkill valley iron maker is reported to have closed for second half.

Iron and Steel Bars.—Prospects for new business in steel bars are better as implement manufacturers, railroads and other industrial consumers are negotiating for last half. Including the large inquiry for a Wilkes-Barre consumer, 20,000 tons or more are in the market. First half contracts are well specified. Bar iron remains 1.40c to 1.45c, mill, and is rather weak. Some of the plants will close this week for repairs.

Plates.—The 1.60c, Pittsburgh, price, so long firmly maintained by eastern Pennsylvania plate makers, has been broken. These mills are now quoting 1.50c, Pittsburgh base, for eastern shipment to the large trade, and have made contracts at this figure to the year end. New business is moderate, and unfilled tonnage is shrinking. The Worth Bros. Co. is low on the 5,500 tons of plates for government collieries, quoting 1.40c, Coatesville on most of the requirement. The Central Iron & Steel Co. will receive 1,600 tons of ship plates from the Maryland Steel Co.

Structural Material.—New business in shapes is comparatively small, but the position of eastern mills has not materially changed. Deliveries are quite prompt, except in the smaller sizes. Occasional reports of shading of 1.45c, Pittsburgh, are heard, but lack substantiation. Store prices are well maintained.

Sheets.—Operations of eastern sheet makers continue at a high pitch. While forward business is light, early orders are liberal, especially in the heavier gages. Prices are staple.

Semi-Finished Material.—Buyers of billets usually ask prompt shipment, but cannot always be accommodated by eastern makers, who are sold up well through third quarter. Prices are reasonably firm.

Old Material.—The movement of the market is sluggish. Buyers show no especial interest and their purchases are usually those of material under pressure. Small sales of heavy steel at about $11.50 and $12 are noted. Borings are irregular. Steel axles have sold at $17.75, delivered.

Fair Pig Iron Sales at Birmingham

With Most Producers Adhering to $11 Basis—Reports of Low Prices Cause Efforts to Speculate

BY W. B. NEAL

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., July 1.

Pig Iron.—Substantial additions have been made to unfilled order requirements in the past 10 days, and price considerations during that time no doubt represent significant concessions from an $11, Birmingham basis, especially where round lots of low grades were entered; however, at this time it is quite certain that the majority of producers are disposed to adhere strictly to an $11 schedule for such tonnage as is being offered. Specific information is furnished to cover the sale of an aggregate of 9,000 tons in the past week. In this the largest single consideration was a lot of 1,000 tons of No. 2 soft for delivery in local territory. A large interest reports the sale of 3,000 tons in lots of 500 to 750 tons each, for shipment in the third quarter, at $11 per ton, Birmingham, for No. 2 foundry, and another large concern reports 5,000 tons in similar quantities sold at the same price. A single lot of 200 tons of analysis iron was sold at $12 per ton, Birmingham, and 500 tons of No. 4 foundry for delivery in the remainder of the year sold at $10 per ton, Birmingham. The demand covered a very wide range of territory and sales were made in competitive sections in but few cases. With the publicity given the offering of certain grades of a local brand in northern markets at prices around $10.50 per ton at Birmingham for No. 2 foundry, a disposition to buy for speculation developed among the leading merchant interests, and offers to producers at very low figures comparatively, were made. As to whether or not any tonnage was sold in the week under such a plan, definite statements cannot be made; but there has been some trading in Birmingham warrants. Forwardings from local yards were larger in the last week of the month than in any of the three weeks preceding, although shipping instructions for the

first and second weeks in July are very light in anticipation of the usual close down for July Fourth. Of the four furnaces mentioned in last report as having just been blown out, it has developed that two were only banked temporarily and have been put back in blast. This makes a total of 14 active stacks on foundry iron as of July 1, with two stacks scheduled to go out of blast early in the month. The output of basic will be represented by seven active stacks July 1, with two stacks producing warm blast charcoal iron.

Old Material.—All quotations are nominal and subject to change with local conditions, and the volume of business being transacted is even smaller than at the time of last report.

Coal and Coke Conditions in the South

Birmingham, July 1.—The movement of steam coal has been reduced to a certain extent, as is usually expected just prior to the semi-annual close-down at the majority of consuming plants, and operations have of necessity been curtailed. In view of the smaller tonnage being required for furnace operations, and the stocks that have been accumulated in the past few weeks at practically all plants, it is probable that the suspension at all mines for July Fourth will be of longer duration than ordinary; however, the production has been increased to such an extent that the maintenance of price seems hardly probable. The unsettled labor conditions in the Virginia and West Virginia fields have not affected the local situation. The production of furnace coke has been adjusted to the furnace requirement by the blowing out of bee-hive ovens, and quotations on foundry coke are unchanged.

Colonel Frank T. Huffman, William L. Caten and Frank Wuichet have been appointed appraisers of the Barney & Smith Car Co., Dayton, O., which was recently put into the hands of receivers. The appraisers will submit the value of the defendant company's property on or before July 10.

John W. Park, La Porte, Ind., pioneer threshing machine man, died recently at the age of 71 years. He had been connected with the M. Rumely Co. since 1871. When he first went to work for the company he was employed in the field and sales work and his territory extended from coast to coast.

Lowest Price Disappears at Cincinnati

But Southern Market is Still Unsettled—Flurry Caused by Low Quotation on Ironton Iron—Slump in Scrap

BY S. G. BACKMAN

Office of THE IRON TRADE REVIEW,
503 Mercantile Library Bldg.,
Cincinnati, July 1.

Pig Iron.—The southern Ohio market has been given somewhat of a flurry within the past few days by the appearance of some resale iron that was sold in some cases at $14, Ironton, for nearby delivery. Several fair-sized tonnages were taken at this figure, but it is now a question as to whether or not this was strictly No. 2 foundry iron. The general furnace quotation is $14.50, Ironton, for any delivery this year, but it is strongly rumored and probably true that several special sales have been made recently at $14.25, Ironton, which could probably be given as the minimum quotation for No. 2 foundry iron from this district. Some furnaces are holding at $15, Ironton, and still another has thus far refused to concede below $15.50, Ironton.

The southern situation is also somewhat unsettled. It appears that the $10, Birmingham, price that was in evidence here about ten days ago, has been withdrawn, and that $10.50 is now the general minimum quotation for strictly No. 2 foundry iron. However, one or two sales of a special nature, but which embodied regular No. 2 foundry iron, have been secretly made at $10.25, Birmingham, for nearby shipment. Sales at $11, Birmingham, are being constantly made by some Alabama furnaces that are still holding at this price. The $10.25 and $10.50, Birmingham, prices mentioned above refer to both Tennessee and Alabama irons.

The general report is that sales have been better during the past week than for some time, but the tonnages have generally been in small lots. The Black-Closson Co., at Hamilton, O., and the Nordyke & Marmon Co, at Indianapolis, have both bought fair-sized tonnages, portions of which were southern Ohio resale iron. A large eastern pipe company is inquiring for 5,000 tons of gray forge and No. 4 southern, and a Lima, O., manufacturer wants slightly over 1,000 tons of southern foundry iron for last half shipment.

The Chattanooga furnace, at Chattanooga, Tenn., has closed, for the time being, but will probably resume operations as soon as the market becomes stronger and prices higher.

Coke.—The coke market is apparently stronger despite the fact that quotations are far too high in comparison with pig iron and other kindred prices. The minimum spot prices on Connellsville and Wise county furnace coke have been slightly advanced within the past week, the former being now $2.20, and the latter $2.25, ovens. Pocahontas and New River prices are unchanged, but firm. The labor conditions in the coke fields are very bad and in almost all cases it is hard to obtain enough help during the present hot weather to satisfactorily operate the ovens. There is more foundry coke being contracted for than furnace coke, as the deadlock between the furnace interests and the ovens as to prices is still in existence. New River furnace coke for prompt shipment is given at $2.50 to $2.60, and Pocahontas 48-hour grades for the same delivery at from $2.35 to $2.50. Pocahontas foundry coke is being held at from $2.75 to $3.00 and New River foundry coke at from $3.25 to $3.50.

Finished Material.—The local sheet metal mill has shut down for a short period for repairs, as is the custom about this time of the year. Specifications have been rather heavy during the past few days, and the mill is now about seven weeks behind on deliveries. The indications are that a good fall business will be realized. The mill has refused to concede to any prices below 3.40c for galvanized sheets No. 28, and 2.35c for black No. 28, both Pittsburgh basis.

A leading local warehouse has reduced its price on steel bars, iron bars and plates and shapes 10 cents per 100 pounds. Sheets and shafting are unchanged. Warehouse business is only fair in most lines, while in some it is somewhat dull. Buying of building materials has dropped off considerably recently, pending threatened labor troubles in this vicinity.

Old Material.—The scrap iron market has taken a decided drop in prices during the past week. This has been expected for some time, due to the inactivity in the way of transactions and the fact that there is a surplus of iron in comparison with the demand. Practically all grades have been reduced in price, but it is hard sometimes to determine exact quotations in either the buyers' or sellers' cases, because of the lack of anything having transpired here recently upon which they could be based.

Larger Bookings in New York District

Probably 35,000 Tons Pending—Prices Show Less Deviation — Steel Bar Users Placing Contracts

BY C. J. STARK

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg.,
New York, July 1.

Iron Ore.—Eastern consumers show little interest in new purchases and sellers are not pushing matters. With furnace operations upon a more settled basis, consumption is quite even and shipments are going forward steadily.

Pig Iron.—Aggregate bookings among sellers in this territory during the past week have been considerably larger and there remains open a liberal miscellaneous tonnage. Probably 35,000 tons are pending. Buyers usually are not free to release orders unless they are convinced they are receiving inside quotations. For that reason, the movements of buyers and sellers are being conducted more secretively. Prices, while easy, show less deviation in foundry grades. The attractive tonnages in malleable offered are understood to be bringing out lower figures, especially in Buffalo territory. Buffalo malleable is openly offered at $14, furnace. According to the latest information, no part of the large tonnage for the Malleable Syndicate has been distributed. Another Connecticut buyer, however, recently took 4,000 tons of malleable from a western New York furnace. The 5,000 tons or more of basic for a Bridgeport buyer has been disposed of upon the basis of about $15.50, tidewater, it is understood. A New Jersey furnace manufacturer asks 1,000 tons of No. 2X for last half and is expected to buy about 5,000 tons. Small prompt sales are more numerous. The tidewater market for No. 2X remains $15.75 to $16.00, furnace, due mainly to Buffalo prices. An interesting inquiry from a foreign buyer calls for 5,000 to 10,000 tons of 2.50 per cent silicon iron for shipment into first quarter at Mediterranean points.

Ferro-Alloys.—From 500 to 600 tons of ferro-manganese is under negotiation, the largest lot of which is 300 tons for third quarter from an Ohio buyer. Small sales continue and prices are usually not below $60.00, seaboard. Other alloys are quiet.

Plates.—Car builders have reconciled themselves to the expectation of a quiet summer and not much activity in this line is expected before September. New orders remain light. Eastern Pennsylvania makers of plates have reduced their prices $2.00 a ton to meet the competition of the larger makers and are now quoting 1.50c, Pittsburgh, or 1.66c, New York, on sizable lots. Continued active shipments by these makers are steadily cutting down unfilled tonnage. Where pressed, deliveries run from two to three weeks.

Structural Material.—Eastern shape mills are finding it more difficult to maintain their full operations, as new bookings are comparatively light and considerably under shipments. While some contrary reports continue, 1.61c, New York, or 1.45c, Pittsburgh, generally prevails. Some fabricators are reported to be accumulating tonnages which they will later offer in bulk in an effort to attract concessions. Structural work in New York City is quiet, but a fair tonnage is moving outside the metropolis. Fabricated competition remains keen. The Jersey Central pier work, Jersey City, was finally awarded at the lowest price, 2.41c per pound, erected.

Cast Iron Pipe.—New York City is opening bids this week on 15,000 tons of miscellaneous pipe for the extension of its high pressure system. The general market in cast iron pipe continues more active, but close prices invariably mark the more attractive lettings. An improvement in the present bond market would probably release considerable tonnage for municipalities, which is now held in abeyance.

Iron and Steel Bars.—Some of the larger steel bar users in this territory continue to place some contracts for last half. An implement maker reported in the market has closed with Pittsburgh mills. In eastern Pennsylvania, a buyer took 2,000 tons for last half at the full 1.40c, price. A few cancellations by buyers of unshipped tonnage July 1 are noted, but these are not extensive. Bar iron is in the dull period of the year. Eastern makers usually quote 1.40c to 1.45c, mill.

Coke.—Eastern furnaces have been showing more interest in their forward requirements of coke and one consumer has purchased 15,000 tons of Connellsville 48-hour fuel for last half. Another is understood to have taken 10,000 tons and other sales are heard of. It is reported that some of these buyers were able to shade $2.50, ovens, on contract coke.

Old Material.—Trading both by buyers and sellers is almost at a standstill. The equilibrium of conditions is leading to belief in some quarters that the bottom has been reached. Buyers of heavy melting steel are paying around $11.50, delivered, eastern Pennsylvania, but there are not many sellers at this price. Other grades are slow.

IRON MOLDERS' DEMAND

For Higher Wages in the New York and Jersey Districts.

The iron molders' union in New York, Hoboken, Jersey City and Brooklyn sent its delegates around on July 1 with a demand for an increase in the rate of pay from $3.50 to $3.75 a day of nine hours. Foundry proprietors were given their choice of signing a contract for the new scale or having their men called out. It is understood that a majority of the shops signed. The new rate applies to coremakers as well as to bench and floor molders.

The $3.50 rate had been in effect for three years, $3.25 having been the rate prior to that in the New York district.

Death of Josiah Letchworth

Josiah Letchworth, a well known retired manufacturer and a citizen of Buffalo, died June 29, at his summer home, "Glenwood," on Owasco Lake, New York, in his 78th year. Mr. Letchworth was the youngest of eight children, of whom his brother, the late William P. Letchworth, was identified with the firm of Pratt & Letchworth for many years. Josiah Letchworth went to Buffalo in 1856, and became a member of the firm of Pratt & Letchworth, and was soon after elected treasurer, a position which he held until his death, although he had not been active for a number of years in business. His nephew, O. P. Letchworth, is also connected with the firm. Mr. Letchworth is survived by his wife, two sons, P. E. and Jeffrey J. Letchworth, and a daughter, Mrs. Charles Wilson.

Furnace Blown In.—Another of the blast furnaces of the Lackawanna Iron & Steel Co., at Cornwall, Pa., has been blown out, leaving two of four active stacks in operation. The large Warwick furnace, at Pottstown, will be put out for relining about Aug. 1. The rebuilt Keystone furnace of the Reading Iron Co., at Reading, Pa., is expected to go in about Sept. 1, when one of the furnaces of the company now active will probably go out.

The Globe Iron Co., Jackson, O., expects to light its Globe furnace this week.

BUFFALO MARKET

Shows More Activity in Pig Iron—Heavy Consumption Continues

BY FRANK R. DOLBEE

Office of THE IRON TRADE REVIEW, Buffalo, July 1.

Pig Iron.—Placement for the week reached fully 20,000 tons, being larger than has been recorded in some time. There is still under negotiation inquiry for considerable more iron. Buyers are apparently observing the market closely for a possible turn. They have been given to understand by the furnaces that the bottom has about been reached in prices, as producers here feel they are operating closely upon the production base, as the cost of making pig iron is now about $2 higher than it was at the time the market reached its last low level, owing to the higher cost of ore and the firm and upward movement of coke.

Prices remain practically the same as quoted last week with the possible exception of malleable, on which the spread has narrowed to $14.25 to $14.75, in place of the maximum of $15.

Finished Material.—The mills and agencies of the district all report that the sentiment of the market seems stronger. They base this conclusion on the fact that the material being specified is practically all going into immediate consumption. Buyers who are holding off for a possible softening of the prices of finished material, it is claimed, will be confronted with a buying movement within the next 60 days which may lead to another congestion of the mills, even though it may not prove as extended as the one that is just passing. There is little or no improvement in deliveries and prices on bars, plates, shapes and structural hold firm as they have done for months. There are also no cancellations to report.

Fabricators are satisfied with the volume of business in structural, although the market is not quite as active as it has been and the premiums of as high as $6 a ton, previously asked have practically been erased and not over $1 a ton is now being asked. The fabricators are being worked to their capacity, and during the month just past the bookings were in excess of the shipping tonnages.

Cold rolled steel is holding firmly at 60 per cent off with a spread of 5 per cent for less than carloads. Spikes have weakened to 1.75c base. Tin plate and uncoated sheets are firm, while in galvanized sheets there has been a slight softening during the week.

Old Material.—The prevailing low prices have occasioned a greater volume of business in the past week than has been apparent for a considerable time. Dealers are picking up stocks. The impression prevails that the prices have about reached the low limit and that any further changes will be upward instead of going still lower. The activity of the week has been largely in turnings and borings, bundled sheet scrap and old steel axles. Both of the latter commodities have been added to the schedule for the week. Heavy melting has softened 50c and is now quoted at $11 to $11.50, and a similar easing off in No. 1 railroad and machine cast scrap and cast iron borings is noted. The other prices remain about the same for gross tons, f. o. b., Buffalo.

METAL MARKETS

Chicago

July 1.

New Metals.—The market for new metals remains inactive in this territory and prices are soft accordingly. We quote, dealers' selling prices f. o. b., Chicago, as follows:

Lake copper, carload lots, 14¾c; casting, 14½c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 5.05c; lead, desilverized, 4.10c; sheet zinc, $7, f. o. b. La Salle, in carlots of 600 pound casks; pig tin, 42.77c; Cookson's antimony, 8¾c, other grades, 7¾c.

Old Metals.—Our quotations on old metals are still nominal owing to the absence of material transactions. The reasons for the present conditions are the subject of considerable speculation, as it is certain that previous to the advent of inactivity, consumers had very little opportunity to accumulate stocks. It is thought that in view of this fact, a lack of buying must indicate a marked decrease in consumption.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, crucible shapes, 16¾c; copper bottoms, 12c; heavy red brass, 12c; heavy yellow brass, 11¾c; No. 1 red brass borings, 11c; No. 1 yellow brass borings, 8c; brass clippings, 10c; lead pipe, 3 9-10c; zinc scrap, 4c; tea lead, 3½c; No. 1 aluminum, 19c; No. 1 pewter, 32c; block tin pipe, 42c; tin foil, 38c; linotype dross, 3¼c; electrotype dross, 3¼c; stereotype plates, 4½c; stereotype dross, 4¼c.

New York

July 1.

Copper.—The market appears to be well cleared of the cheap copper that was being offered last week, and there is an improved tone to it. The large sellers are holding electrolytic at 15c and leading producers of lake are not offering it at present low prices.

Consumers are said to be running on small stocks at present, and the probability is that fresh supplies will be required in the near future. It is generally believed by those in a position to estimate accurately on the forthcoming producer's report that a decrease of between 12,000,000 and 15,000,000 pounds will be shown, and that a large volume of buying will follow. The market for small lots of the metal is nominally 14.50c for electrolytic, 14.87½c for lake and 14.25c for casting, cash, New York.

Exports of copper for June amounted to 27,815 tons.

Tin.—Heavy liquidation by foreign speculators has depressed the London tin market £13 10s since June 25. Spot standard tin sold in London today at £189. The market has experienced wide daily fluctuations. This has discouraged action by consuming interests, and they have done little buying. The surprising feature of the declining market is that the pronounced weakness preceded a remarkably strong statistical report of the industry at the end of June. Stocks abroad and in the United States declined 1,398 during the month as a result of fair shipments into consumption and reduced arrivals of the metal. The total visible supply June 30, is 11,101 tons compared with 13,710 tons the previous month. Deliveries into domestic consumption in June amounted to 3,800 tons, and arrivals aggregated 2,860 tons.

Sales of spot tin were made today at 41.-50c, July at 41.40c and August at 41.60c and 41.40c.

Lead.—The demand for lead is still very light and prices are being quoted by some sellers under that of the leading producer of the metal. All positions up to Sept. 1, can be bought in liberal quantities at 4.32½c in New York. With the exercise of a little patience, as low as 4.30c could be done.

Spelter.—A fair demand for spelter has prevailed during the past week. Quotations on prime western delivered in the New York territory have been advanced by practically all sellers to 5.35c. Recent sales were made at 5.30c for July and August.

Antimony. — The antimony market is unchanged. Business is quiet, with Cookson's offered at 8.65c, Hallett's at 8.25c and other brands at 7.50c to 7.75c.

Plant Opens July 7

The new plant of the Gadsden Pipe Co., Gadsden, Ala., is scheduled to begin operation on Monday, July 7. Eight pipe and an equal number of fitting floors will be operated at the start, and the number will gradually be increased until there are sixteen pipe floors and a full equipment of fitting floors and benches.

The buildings include a main foundry, 75 x 240 feet, cleaning shed 40 x 40 feet, cupola room 40 x 50 feet, machine shop 40 x 80 feet, and pattern shop 20 x 60 feet. The buildings are now complete and the last of the machinery being placed in position.

The officers of the Gadsden Pipe Co. are: Otto Agricola, Gadsden, president, Wm. M. Byrd, Birmingham, vice president, and Horace Hammond, secretary and treasurer. Walter Stallings has been appointed superintendent. Mr. Agricalo is also at the head of the Campbell Mfg. Co. and the A. & J. Mfg. Co., of Gadsden, while Messrs. Byrd and Hammond are connected with the Coosa Pipe & Foundry Co.

The Riter Conley Mfg. Co., Pittsburgh, has taken the following orders: Two 50-ton ladles, the Carbon Steel Co., Pittsburgh; 64 transmission towers for shipment to Brazil; 30 tainter gates, involving 300 tons, for the American Water Works & Guarantee Co., Pittsburgh.

Railroads Place Large Bolt Orders

Three Pending Inquiries for Rails for Next Year's Delivery — Other Rail Business

Many of the railroads continue to close for their last half needs of various iron and steel materials. The bolt market is especially active. The Chesapeake & Ohio railroad has placed 1,500,000 bolts with an Ohio maker. The Virginian railway, the Seaboard Air Line and the Norfolk & Southern railroads are in the market for their last half requirements, estimated at about 1,000,000 bolts each. Prices quoted upon orders of this size have been low and very irregular.

In standard spikes, the Chesapeake & Ohio railroad has divided 3,000 kegs between the Illinois Steel Co. and the Tredegar Iron Works, of Richmond, and is still inquiring for 1,500 kegs. Railroad spike prices remain 1.70c to 1.75c, Pittsburgh. The Chesapeake & Ohio railroad is also about to close on 3,000 tons of steel bars for last half.

At least three different inquiries for rails for next year's delivery remain before makers. One of these inquiries, for 28,000 tons, from a southern railroad, referred to last week, is not from the Southern railway, as reported. The Southern railway now has put out inquiries for 15,000 to 20,000 tons, but these rails are for shipment during the current year.

LOCOMOTIVES AND CARS.

The Nigerian Railways of Africa have ordered eight super-heater mountain type locomotives from the American Locomotive Co.

The Solvay Process Co. has purchased one six-wheel switching locomotive from the American Locomotive Co.

The Great Northern is said to have ordered 1,000 coal cars from the American Car & Foundry Co., but this item has not been confirmed.

The Southern Railway has ordered 250 hopper cars from the Pressed Steel Car Co.

The Grand Trunk railway is in the market for 25 locomotives.

The Norfolk & Western railway is in the market for 10 locomotives.

RAIL ORDERS AND INQUIRIES.

The Southern Railway has issued inquiries for 15,000 to 20,000 tons of rails for this year's delivery.

Los Angeles Railway, 1,000 tons of tee rails. Inquiry out.

Northwestern Elevated Railway, Chicago, 500 tons of tee rails. Inquiry out.

BRIDGE WORK.

Bridge for the Baltimore & Ohio railroad on Monongahela division, 3,000 tons. Revised bids asked.

Pier for Central Railroad of New Jersey, Jersey City, 600 tons. Contract now placed with low bidder, the Guerber Engineering Co.

Brooklyn plaza, Manhattan bridge, 800 tons; steel work awarded A. E. Norton Co.

Pennsylvania railroad has divided about 900 tons in small bridges among McClintic-Marshall Construction Co., Belmont Iron Works, Pennsylvania Steel Co., Eastern Steel Co., Cambria Steel Co., and L. F. Shoemaker & Co. This does not include bridge at Braddock, Pa., awarded McClintic-Marshall Construction Co., as previously reported.

VERY LARGE ADDITIONS

To Be Made By Ford Motor Co.— Other Structural Prospects.

Detroit, July 2. (By wire.)—Plans for a new factory building to be erected this summer by the Ford Motor Co. adjoining its main plant at Highland Park call for a building 800 feet long and 140 feet wide. It will be constructed of reinforced concrete and trussed steel exactly on the same architectural lines as its main plant. The company will also erect an addition to its branch plant at Woodward avenue and Grand boulevard, 300 x 100 feet, to be constructed of the same material. Albert Kahn, who made the plans, estimates that approximately 18,000 tons of steel will be used in the two buildings.

Contracts reported during the past week in the Chicago district are larger in number and aggregate a greater total than has been reported for some time. This may be ascribed in part to lower quotations by the fabricators. Many small contracts have been let and the reduction of $2 a ton in store prices may encourage further activity. The contracts let during the week totaled 2,653 tons.

The action of the railroads in accepting the city's offer for a site for the union depot at Cleveland brings the new depot project to a much more definite shape. It now seems probable that the drawing of plans for this new monumental structure, which will cost about $6,000,000, will soon be started.

The Toronto harbor improvement, noted in last week's new business reports, will require upwards of 2,000 tons of reinforcing bars and a number of thousand tons of structural material. The whole project now under way is to cost upwards of $19,000,000.

Bids are to be opened July 17 on section 1 of the Welland canal improvement. Over 5,000 tons of reinforcing bars and a large volume of steel sheet piling will be required.

STRUCTURAL AWARDS.

Extensions to plant of Lord & Burnham, Irvington, N. Y., 700 tons, to Levering & Gerrigues.

Building for Southern Bell Telephone Co., Memphis, Tenn., 500 tons, to Riverside Bridge Co.

Section No. 4, Broadway-Fourth avenue subway, New York City, 4,150 tons; Dock Contractor Co., low bidder. Formal award not yet made.

Astor apartment, Seventy-sixth street and Broadway, New York City, 900 tons, to Levering & Gerrigues.

Addition to State Mutual building, Boston, 700 tons, to New England Structural Co.

Track elevation for Pennsylvania lines east, near Pittsburgh, 1,200 tons, to McClintic-Marshall Construction Co.

Building for Ford Motor Car Co., Detroit, 3,400 tons, McClintic-Marshall Construction Co.

Seven hundred feet of 9-foot penstocks for Stone & Webster Engineering Corporation, Boston, 300 tons, Riter-Conley Mfg. Co.

Hearth jacket bands and plates, Carnegie Steel Co., 250 tons, the Riter-Conley Mfg. Co.

The Buffalo plant for the J. H. Williams & Co., of Brooklyn, drop forge manufacturers, will take fully 800 tons. Contract has been awarded to the Lackawanna Bridge Co., Buffalo.

Addition to Ritz-Carlton hotel, Philadelphia, 1,200 to 1,500 tons estimated. Geo. A. Fuller Co. awarded general contract.

High school for Girard College, Philadelphia, about 500 tons. J. S. Cornell & Son awarded general contract.

United States government, steel for lock gates, Dalles, Ore., 1,169 tons to the Independence Bridge Co.

PENDING CONTRACTS.

Warehouse for Strauss & Co., Baltimore, 1,800 tons. Original plans to be revised.

The Maryland Steel Co. has asked bids on 1,650 tons of structural shapes for boat work recently taken.

No. 3 open hearth Bessemer and electric steel works of the Lehigh plant of the Bethlehem Steel Co., South Bethlehem, Pa., about 4,000 tons. Plans issued for bids June 10.

Addition to store occupied by Spear & Co., Pittsburgh, 200 tons.

Ford & McCaslin, Cleveland, are about to let the contract for a garage, five stories, which will require about 500 tons of steel.

Milton dam, Youngstown, Louis Adavasio & Co., low bidders.

The Wilson & Smith, 8 story store and loft building, Buffalo, Wood & Bradney, architects, 900 tons, American Bridge & Steel Co. is low bidder on delivery and Jones & Laughlin low on delivery and erecting price combined. The contract will be awarded in a few days.

SHIP BUILDING WORK.

One to three steamships, Mallory Steamship Co., Newport News Ship Building & Dry Dock Co., low bidder.

The Fenmore Iron Works Co., 247 East Fifty-sixth street, New York City, which was recently incorporated with a capital of $10,000, advises that it is engaged in the fabrication of general structural and ornamental iron work for buildings. Adolph Weiss is president of the company.

FAIR TREATMENT

Should Characterize Adjustment of Claims, Said Mr. Early,

At the last meeting of the American Iron and Steel Institute, George P. Early, special agent of the American Sheet & Tin Plate Co., Pittsburgh, read a paper on "Claims and Their Adjustment". He said in part:

"In the settlement of claims it should be the policy of the claim agent to accord the customer prompt, just and fair treatment. The claim agent should always try to conserve the customer's interest just as faithfully as he does that of his company, for he should appreciate the loyalty of a satisfied buyer.

"The claim agent should not try to see how cheaply he can settle a claim, but how justly. Complaints should be thoroughly investigated, not only to ascertain what merit they may have but to learn the cause of the trouble, so that steps may be taken to avoid their recurrence, if possible.

"Claims should not be settled upon a hair-splitting basis. The claim agent should be broad and liberal. Claims should not be settled on a guessing basis of loss, for the reason that such settlements are not fair to either the buyer or the seller. The claim agent should be more concerned about the justness of a claim than the amount of it. If a customer should get the better of a settlement when the amount is guessed at, he would probably prefer to make such settlements in the future. If he should get the worst of it, then he would not feel satisfied. No settlement is a good one that leaves the customer dissatisfied.

"When a customer innocently orders improper material for a certain purpose and runs into trouble, he should assume the loss. But his loss should be reduced by the seller in any way that seems feasible, and the customer should be educated as to the kind of material he should order in the future. When a customer knowingly orders a cheaper grade in substitution for the proper grade, he should be held strictly accountable to the liability thus incurred.

As a rule, manufacturers of steel products do not allow labor charges. In fact, such material is usually sold with the distinct understanding in the formal contract of sale that the manufacturer shall be exempt from such liability, as well as for damages of a consequential nature. And yet customers will often present claims for labor charges and consequential damage and think the claim man narrow, unfair and arbitrary, because he refuses to do the very thing which they formally agreed his company would not be asked to do. The claim agent should always defend manufacturing rules and principles.

Some Details of Procedure.

The file record should always show that the next move is up to the customer. If the case has had attention and he lets the matter drop, the claim should be taken from the current files and put in the disposed cases. It often happens that a complaint will come into the claim department like a lion and go out like a lamb, largely due to the genius and facility some customers have for going off half cocked.

"It should be the practice of the claim agent to make a report each month to the executive, operating and sales departments, giving an alphabetical list of customers to whom claims have been allowed and the amounts. These reports should give the grade of material, the nature of the complaint, and the name of the mill at which the material was made. He should make a report each month to the sales manager of each district sales office of claims allowed to customers in his territory. This report should give full particulars. He should also make a report each month to the operating department, showing all claims allowed against the various products of each mill; and to the manager of each mill, showing full particulars of all claims allowed against his mill. He should also have a card system showing, at all times, the amount allowed various customers, as well as the amount allowed against the various products.

"These reports will be, of course, statistical, but they will tell an interesting story to those to whom they are sent. They give the president full information as to what the claim department is doing. They tell the sales department the sources of complaints and claims, and how they have been disposed of. They tell the sales manager of each sales district of the complaints and claims made, and by whom, in his territory, and how settled. And they tell the operating department and the various mills of the complaints against their various products and by whom made. These reports will suggest to the manufacturing department corrective measures which may remove causes for complaints, if the fault is due to mill practice.

Conclusion

"In conclusion, I want to correct an impression that is somewhat prevalent among some customers; namely, that the claim agent is working only for the interest of his company and that he is not particularly concerned regarding the losses and troubles of the customer, when material proves unsatisfactory. While such an impression might reflect the attitude of the customer if he were the claim man, yet it does not reflect that of an efficient claim agent. While the claim man should endeavor to save his company from all unnecessary losses, yet he should see to it that it bears cheerfully all losses that are properly chargeable to it. The claim man should be broad-gaged enough to see each complaint not only from his point of view but from the view-point of the customer, and to handle it in such a way as to conserve the interests of all concerned. The claim man is always in the center of conflicting interests and opposing opinions. He is the buffer between the customer, the sales department, the operating department, and the mill. In handling claims it is of course impossible at all times to please everybody, no matter how hard one may try to do it. But there is much gratification, however, in the consciousness of having tried faithfully to do your duty."

FIX VALUE

Of Michigan Mining Properties—Assessors Disagree.

Michigan state tax assessors and assessors of the city of Bessemer cannot agree as to how much the United States Steel Corporation's Tilden mine is worth. The city says it is worth $1,000,000 or more. The state says it is worth $150,000 or less. It is assessed at $200,000 exclusive of a personal property appraisement of $104,000.

The Bessemer board of review some weeks ago compromised its differences by valuing the mine at $300,000. The state tax commission had adopted a report by the state geologist fixing the valuation at $150,000. The Steel Corporation appealed to state assessors who served notice that unless the valuation was reduced it would review the assessment. The board of review reconsidered its action to the extent of paring down the appraisement to $200,000. All told, the mines of the city have been put on the roll by the municipal assessors at $3,030,957, apportioned as follows:

	Realty.	Personal.
Palms	$1,000,000	$150,000
Tilden	200,000	104,000
Colby	786,000	159,462
Yale	450,000	36,495
Winona	95,000	.....
Jackpot	50,000	.....
Totals	$2,581,000	$449,957

SOUND CONDITIONS

Prevail in Business World, According to Western Bank.

An optimistic statement of conditions in the business world has just been issued by the Iowa National Bank, Des Moines, Ia., an institution which has the reputation of being as nearly right in its prophecies as any human agency can be. The following excerpt from the July statement is of interest:

"It has been stated recently that we are on the verge or are in the midst of a business panic. Men of consequence in the financial world have recently publicly referred to the present situation in Wall street as a stock market panic. So far as the figures we have been able to bring together on the situation are concerned, we find no evidence of a present or prospective panic either in business or in the financial world. Business has been falling off, as was expected, and as is quite usual at this season. The falling off has been somewhat more sensational because of the tight money market. Business men have been unable to get enough money to finance enlargements or extensions except by paying interest rates which are too high for such purposes. Up to this time there has been sufficient money for the regular needs of current business and interest rates have risen because we have been called upon to export a considerable amount of gold to European countries which needed it worse than we did.

"Trading on the stock exchange has been slow compared with former years because money has been too scarce to allow of a sufficient quantity being used on the stock market. Our money shortage has been increased by the farmers holding a large part of the 1912 crops and awaiting higher market prices. These farmers have been compelled to borrow on the grain they are holding but their loans are small when compared with the actual value of the grain itself, so that there is nothing unsound in such a situation. The tight money market has forced some of them to sell and before the new crops are harvested many more must let go of a portion of the old crops which they are holding. This will provide additional money for the handling of the new crop, although it is probable that the 1913 crop moving will make money even scarcer than it is at present.

"It will be seen that the actual volume of business transactions is large by taking a look at the bank exchanges of the country. Clearings for May were larger than for any previous May with the exception of May, 1912, and for the country, exclusive of New York City, May clearings were the high record for that month. Clearings for the entire country for the first five months of 1913 are equal to 1912, exceeded 1911, almost reached 1910 and exceeded any other year. Remembering that stock exchange transactions have been small and that these clearings represent in a large measure mercantile transactions and grain sales, the figures for the total volume of business are quite satisfactory.

"The number of concerns failing in business during May totaled 1,206, with liabilities of over $16,000,000. The number of failures was less than that of any previous month this year and the total liabilities were also less. There have been a few large failures, but more than 97 per cent of the failed concerns have been of small caliber. Failures have been fewer so far this year than for the same period last year but the liabilities of the failed concerns have been 15 per cent greater than last year and nearly 25 per cent greater than the previous year. Compared with the past, liabilities of failures so far this year are the greatest since 1893. The decrease shown for May is, therefore, gratifying and it is hoped the later months of the year will show fewer failures.

"The gross earnings of all railroads for April totaled $245,000,000, an increase of $24,000,000, or about 11 per cent over the same month last year. Net earnings for the month stood at $60,000,000, a gain of $2,000,000, or nearly 4 per cent, over April, 1912. The gain in gross is conclusive evidence of the volume of merchandise and grain shipments, meaning business transactions, and the inability of the railroads to make a proportionate gain in net is, of course, due to increased operating expenses which for the month of April exceeded last year by $22,000,000, or nearly 14 per cent. Railroad managements are doing something to increase net earnings by increasing car efficiency, but the present heavy burden of increased taxes and higher wages is more than they can permanently stand. Reports already in for May show an increase of 10 per cent in gross earnings amounting to $32,000,000. As these reports come from the principal lines, the final figures will be decreased by adding the reports of the less important systems. The showing for May, however, is quite satisfactory, and it remains to be seen what the managements have been able to do in the way of decreasing operating expenses.

"The number of idle cars is at present less than half what it was a year ago and slightly over one-fourth the figures of two years ago. Cars are well employed and even though the 1913 crops as a whole will not break records, the moving of the crops will be attended with considerable difficulty for lack of cars."

COMPENSATION BILL

Killed in Pennsylvania Senate—Many Labor Laws Passed.

Harrisburg, Pa., July 1.—The legislature has adjourned without enacting a workmen's compensation law and without changing the minor labor laws. The fate of the minor labor bill was not settled until the closing quarter hour. The compensation law died in the senate.

Immediately upon the adjournment of the legislature the governor approved an act continuing for two years the Industrial Accidents Commission, headed by David A. Reid, Pittsburgh, which drafted the compensation bill. The commission will prepare an act for the session of 1915 or for any special session which might be called in the meantime.

A bill passed in the session creates a public service commission to replace the state railroad commission. It will be composed of seven commissioners to be appointed for eight years at $10,000 a year, and will have jurisdiction over thirty some lines of public service.

The legislature also passed amendments to the corporation tax laws, which are yet to be acted upon by the governor; created a department of labor and industry replacing the factory inspection department and to be in charge of industrial supervision, encouragement, statistics and arbitration; established semi-monthly pay system; provided for direct state wide primaries for all offices; limited hours of employment of horses and continued commission to study building construction and report a building code in 1915.

It authorized a survey for the Lake Erie-Ohio ship canal; construction of Pymatuning swamp reservoir, which, however, may not become a law; appropriated about $10,000,000 for roads and about $500,000 for bridges. All of these appropriations are subject to review by the governor, who will be compelled to make substantial reductions and possibly veto some bills because the available revenue has been exceeded. It is estimated that changes in the corporation tax laws, with the new tax of 2½ per cent ad valorem on anthracite coal, will increase the revenues about $4,500,000 above those of the last two years.

F. P. Oll & Co. have awarded the contract for a one-story machine shop, 37 x 61 feet, to be built at Tacony and Church streets, Philadelphia.

IRON AND STEEL PRICES

Pig Iron

PITTSBURGH

(Through This Year.)

Bessemer	$16.90
Basic	15.40
No. 2 foundry	14.90 to 15.15
Malleable	15.15
Gray forge	14.65

The feright rate from valley points is 90c.

CLEVELAND

(Through this Year Delivered in City.)

No. 1 foundry	$15.25
No. 2 foundry	14.75
No. 2 southern	15.35 to 15.60
Bessemer	16.90
Silveries 8 per cent silicon	20.55

CINCINNATI

(Through This Year.)

Southern foundry No. 1	$14.00 to 14.75
Southern foundry No. 2	13.50 to 14.25
Southern foundry No. 3	13.00 to 13.75
Southern foundry No. 4	12.75 to 13.50
Southern gray forge	12.50 to 13.00
Mottled	12.50 to 12.75
Southern No. 1 soft	14.00 to 14.75
Southern No. 2 soft	13.50 to 14.25
Standard southern car wheel	27.25 to 27.75
Southern Ohio No. 2	15.45 to 16.20
Southern No. 3	14.95 to 15.70
Southern Ohio No. 4	14.70 to 15.45
Silveries 8 per cent silicon	19.70 to 20.20

(Freight from Ironton, $1.20; from Birmingham, $3.25.)

CHICAGO

(Delivered Chicago, this year, except northern foundry and malleable Bessemer, which are quoted f. o. b. local furnaces.)

Lake Superior charcoal	$16.75 to 17.75
Northern foundry No. 2	14.50 to 15.00
Southern foundry No. 2	14.85 to 15.35
Jackson co. silveries, 8 per cent	21.40
South'n silveries, 5 per cent sil.	17.85
Alabama basic	17.85
Malleable	15.00 to 15.50

PHILADELPHIA

(Prompt and third quarter shipment delivered to consumer's plants, in Philadelphia and vicinity, unless otherwise specified.)

Northern No. 1X foundry	$16.25 to 16.50
Northern No. 2X foundry	15.75 to 16.25
Northern No. 2 plain	15.50 to 15.75
Standard forge (Eastern Pa.)	15.00 to 15.25
Virginia No. 2X	16.30 to 16.50
Southern No. 2	15.20 to 15.50
Standard low phos., Phila	23.25 to 23.50
Malleable	16.25 to 16.50
Basic (Eastern and Central Pa.)	15.50 to 15.75

NEW YORK

(Prompt and third quarter delivery, prices based at Jersey City and tidewater.)

Northern No. 1X foundry	$16.00 to 16.25
Northern No. 2X foundry	15.75 to 16.00
Northern No. 2 plain	15.25 to 15.75
Virginia No. 2X	16.30 to 16.80
Southern No. 2	15.25 to 15.75
Malleable	15.75 to 16.00
Gray forge	15.00 to 15.25

ST. LOUIS

(Throughout this year.)

Southern No. 1	$14.75 to 15.25
Southern No. 2	14.25 to 14.75
Southern No. 3	13.75 to 14.25
Southern No. 4	13.25 to 13.75

(Freight, Birmingham to St. Louis, $3.75)

BIRMINGHAM

(For southern delivery.)

No. 1 foundry	$11.50
No. 2 foundry	11.00
No. 3 foundry	10.50
No. 4 foundry	$10.25
Gray forge	10.25
Mottled	10.25
Standard basic	11.50
Off basic	11.00
Charcoal	25.00

BUFFALO

(Through this year, delivered in city.)

No. 1 foundry	$14.50
No. 2X foundry	14.25 to 14.50
No. 2 plain	14.00 to 14.25
No. 3 foundry	14.00
Gray forge	14.00
Malleable	14.25 to 14.75
Basic	15.25 to 15.75
Charcoal	16.00 to 17.00

Ferro Alloys

English 80 per cent ferro-manganese, $59 to $61, seaboard, early and forward.

Fifty per cent ferro-silicon on contracts, $75, Pittsburgh, or Philadelphia, for carloads; $74 for larger lots and $73 for 600 tons or more. Twelve to 13 per cent, $26. Eleven to 12 per cent, $25. Ten to 11 per cent, $24. Nine to 10 per cent, $23, f. o. b. Globe Jisco and Ashland furnace. Freight to Pittsburgh, $1.90.

Ferro-carbon titanium 8 cents per pound for carload lots; 10 cents per pound for 2,000-pound lots and over; 12½ cents per pound in lots up to 2,000 pounds.

Freight rates on ferro-manganese, foreign spiegeleisen and electrolytic ferro-silicon from Baltimore to Pittsburgh, $2.16; to Youngstown, $2.48; to Cleveland, $2.57; to Detroit and Columbus, $2.99; to Cincinnati, $3.40; to Chicago and Milwaukee, $4.00. Freights from Philadelphia and New York, 10 and 30 cents higher respectively.

Freight Rates, Finished Material

From Pittsburgh, carloads, per 100 pounds, to:—	
New York	16 cents
Philadelphia	15 cents
Boston	18 cents
Buffalo	11 cents
Cleveland	10 cents
Cincinnati	15 cents
Chicago	18 cents
St. Louis	22½ cents
Denver	84½ cents
New Orleans	30 cents
Birmingham	45 cents
Pacific coast, shapes and plates	80 cents
Pacific coast, sheets, No. 11 and heavier	80 cents
Pacific coast, sheets, Nos. 12 to 16	85 cents
Pacific coast, sheets, No. 16 and lighter	95 cents
Pacific coast, wrought pipe and boiler tubes	65 cents

Coke

AT THE OVENS.

		Prompt shipment.	Contract.
Connellsville district:			
Foundry	coke	$2.85 to 3.10	$3.00 to 3.10
Furnace	coke	2.50	2.50
Wise county district:—			
Foundry	coke	$2.60 to 2.75	$2.75 to 3.00
Furnace	coke	2.25 to 2.50	2.25 to 2.50
Pocahontas district:—			
Foundry	coke	$2.75 to 3.00	$2.75 to 3.00
Furnace	coke	2.35 to 2.50	2.50
New River district:—			
Foundry	coke	$3.25 to 3.50	$3.25 to 3.50
Furnace	coke	2.50 to 2.60	2.60 to 2.90

Iron Ore

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, $4.40; Mesabi Bessemer, $4.15; old range non-Bessemer, $3.60; Mesabi non-Bessemer, $3.40; all at lower lake ports.

Foreign iron ores, 7½ to 8 cents per unit, f. o. b. cars eastern seaboard. Freight rates from Philadelphia to eastern Pennsylvania furnace points range from 35 to 75 cents per ton.

Billets and Sheet Bars

PITTSBURGH

For prompt and forward delivery Bessemer 4 x 4 billets with 0.25 carbon and less, $26.50 to $27.00; open-hearth rolling billets, $26.50 to $27.00; Bessemer sheet and tin bars, $27.50; open-hearth sheet bars, $27.50, f. o. b. Pittsburgh and Youngstown. Forging billets, $33, Pittsburgh. Wire rods, $29 to $30, Pittsburgh.

PHILADELPHIA

Delivered to consumers' plants in Philadelphia and vicinity: 4 x 4-inch open-hearth and Bessemer rolling billets at $27 to $28, and forging billets at from $33 to $35.

Standard Shapes

PITTSBURGH

Standard structural shapes, 1.45c. For extras see card of Sept. 1, 1909.

CHICAGO

Standard structural shapes, 15 inch and under, 1.63c to 1.68c.

PHILADELPHIA

Delivered to consumers in Philadelphia and vicinity. Standard structural shapes from Eastern Pennsylvania mills 1.60c to 1.65c. From Pittsburgh mills 1.60c.

NEW YORK

Standard structural shapes for second quarter delivered at New York by eastern Pennsylvania makers 1.61c to 1.66c. On forward delivery, Pittsburgh district makers are quoting from 1.61c to 1.66c, New York.

Plates

PITTSBURGH

Standard steel plates ¼ inch, thick, 6¼ to 100 inches, 1.45c. For extras, see card of Sept. 1, 1909.

CHICAGO

Tank plates, 1¼ inch thick, 6⅝ to 100 inches wide, 1.63c to 1.68c.

PHILADELPHIA

Delivered to consumers' plants in Philadelphia and vicinity. Tank plates from eastern Pennsylvania mills for prompt or forward delivery 1.65c to 1.75c. From Pittsburgh mills, tank plates 1.60c to 1.65c.

NEW YORK

Steel plates, tank quality, for prompt and forward delivery at New York by eastern Pennsylvania makers, 1.66c to 1.76c on third quarter and last half contracts. Pittsburgh

makers are quoting 1.61c to 1.66c, New York.

Sheets and Tin Plate

PITTSBURGH

No. 28 black	2.25c to 2.35c
No. 28, tin mill black	2.30c
No. 28, galvanized	3.35c to 3.50c
No. 10, blue annealed	1.75c
No. 28 painted corrugated	2.45c to 2.55c
No. 28 galvanized, corrugated	2.45c to 3.55c
Tin plate, 100 pound cokes	$3.60

PHILADELPHIA

Delivered to consumers' plants in Philadelphia and vicinity: No. 10 gage annealed sheets at 1.90c.

Pipe and Boiler Tubes

PITTSBURGH

	Black. Butt.	Galv. Weld.
Steel ¼ to 3 inches	79	70½
Iron, ¼ to 2½ inches	72	61
BOILER TUBES.		
Steel, 3½ to 4½ inches	69	..
Iron, 3½ to 4½ inches	58	..

Other sizes of pipe and tubes take the usual advances as per official cards.

Rails and Track Material

PITTSBURGH

Steel rails, 50-pound and heavier, 1.25c per pound for Bessemer and 1.34c for open-hearth; carload lots less than 500 tons 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.25c schedule on the other weights being irregular and subpect to negotiations; angle bars for standard sections, 1.50c, base, Pittsburgh; track bolts, 2.40c base, Pittsburgh.

Railroad spikes, 4½, 5 and 5½ and 9-16 inch, 1.70c to 1.80c.

CHICAGO

Light rails, carloads, 25 to 45-pound, 1.25c, base; 16 to 20-pound, 1.30c; 12-pound, 1.35c; 8-pound, 1.40c.

Light section relayers, 45 pounds and under, subject to inspection, $22 and $23; standard section relaying rails, subject to inspection, $23 to $24.

Track fastenings, f. o. b. Joliet:

Angle bars, 1.50c; railroad spikes, 1.70c to 1.80c; smaller size spikes, 1.95c, base; track bolts, with square nuts, 2.30c to 2.40c.

Bars, Hoops and Bands

PITTSBURGH

Common iron bars, 1.65c to 1.70c, Pittsburgh; Bessemer and open-hearth steel bars, 1.40c; plow and cultivator 1.40c; channels, angles, zees, tees, under 3 inch, 1.50c, all f. o. b. mill.

Hoops in carload lots, 1.60c, Pittsburgh, in less than carload lots, 1.65c; bands, 1.40c, base, with net extras, as per standard steel.

Cold rolled and ground shafting, 60 per cent off in carloads and 55 per cent in less than carloads delivered in base territory.

CHICAGO

Bar iron 1.50c to 1.55c; hard steel bars rerolled, 1.60c; soft steel bars, bands and small shapes, 1.58c; hoops, 1.63c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting, 58 per cent off list for carload lots, 53 per cent off for less than carloads.

PHILADELPHIA

Delivered in consumers' plants in Philadelphia and vicinity: Steel bars 1.55c to 1.60c on contract and common bar iron, 1.47½c to 1.52½c. Prompt steel bars on mill shipments, 1.85c to 1.90c, delivered. Cut nails 1.90c to 1.95c, Philadelphia. Shafting 60 and 58 and 55 and 53 off in base territory.

NEW YORK

Delivered in New York, steel bars on contract from 1.56c to 1.61c, and common iron bars, 1.45c to 1.55c.

Bolts, Nuts and Rivets

Rivets

Button head structural rivets, 2.10c, Pittsburgh, cone head boiler rivets, 2.20c. Small rivets, 75, 10 and 10 off.

Structural rivets, Chicago, 2.08c; boiler rivets, 0.10c extra.

Bolt and Nut Discounts

(Delivered within a 20-cent freight radius.)

Carriage bolts, ⅜ x 6 inches, smaller and shorter, rolled threads, 75 and 10; cut threads 75 and 5; larger and longer, 70 and 2½.

Machine bolts with hot pressed nuts, ⅜ x 4 inches, smaller and shorter, rolled 75, 10, and 5; cut, 75 and 10; larger and longer, 70 and 7½.

Gimlet and cone point lag or coach screws, 80 and 10.

Hot pressed square, blank or tapped nuts, $5.70 off list; hot pressed hexagon blank or tapped, $6.30.

Cold pressed C. & T. square, blank or tapped, $5.70 off; hexagon, blank or tapped, ⅝-inch and larger, $6.60 off; ½-inch and smaller, $7.20 off.

Wire Products

PITTSBURGH

Wire nails, jobbers' carload lots, $1.70 to $1.80, retailers' carload lots, $1.75 to $1.85, cut nails (western makers), jobbers' lots, $1.70; painted barb wire, jobbers' carload lots, $1.70 to $1.80; retailers' carload lots, $1.75 to $1.85; plain wire to jobbers in carloads, $1.50 to $1.60; and to dealers in carloads, $1.55 to $1.65; polished staples, $1.70 to $1.80; galvanized staples, $2.10 to $2.20.

CHICAGO

Wire nails, jobbers' carload lots, $1.93 to $1.98; retailers' carload lots, $1.98 to $2.05; retailers' less than carload lots, $2.03 to $2.08; painted barb wire, jobbers' carload lots, $1.93 to $1.98; retailers' carload lots, $2 to $2.05; retailers' less than carload lots, $2.03 to $2.08, with 40c for galvanizing; plain wire jobbers, carload lots, $1.73; retailers' carload lots, $1.78.

Cast Iron Pipe

CHICAGO

Four-inch water pipe, $28; 6 to 12 inches, $27; larger sizes, $25; gas pipe, $1 a ton higher.

NEW YORK

Six-inch pipe, 30 pounds to the foot, $23 to $25, f. o. b. New York, in carload lots.

BIRMINGHAM

Water main: 4-inch, $21.50; 6-inch and up, $20.50. Gas main: $1 per ton higher than water main. Special fittings, $42.50 to $47.50.

Old Material

PITTSBURGH

(Gross tons delivered.)

Heavy melting scrap	$12.50 to 13.00
Rerolling rails	14.50 to 15.00
Malleable	11.50 to 11.75
Bundled sheet scrap	9.00 to 9.25
Iron axles	24.00 to 24.50
Old iron rails	14.00 to 14.50
Stove plate	9.00 to 9.25
No. 1 wrought scrap	14.00 to 14.50
Old car wheels	13.00 to 13.25
Low phosphorus	15.00 to 15.50
Machine shop turnings	6.50 to 7.00
No. 1 busheling	11.50 to 12.00
Cast borings	8.25 to 8.50
No. 1 cast scrap	12.50 to 13.00

PHILADELPHIA

Gross tons delivered to consumers' plants in eastern Pennsylvania and western New Jersey:

Old iron rails (nominal)	$17.00 to 17.50
Old steel rails (rerolling)	14.50 to 15.00
No. 1 heavy melting steel	11.50 to 12.00
Old car wheels	13.00 to 13.50
Old iron axles (nominal)	25.00 to 26.00
Old steel axles	17.50 to 18.00
No. 1 railroad wrought	14.50 to 15.00
Wrought pipe	11.00 to 11.50
Cast borings	8.00 to 8.50
Machine shop turnings	8.00 to 8.50
Heavy cast (broken)	13.00 to 13.50
Malleable	12.00 to 12.50
Stove plate	9.50 to 10.00
No. 1 forge	10.00 to 10.50
Low phosphorus	15.75 to 16.25

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

CLEVELAND

Gross Tons

Old iron rails	$15.00
Old steel rails (under 3 ft.)	13.00 to 13.50
Old steel rails (over 6 ft.)	12.75 to 13.25
Relaying rails	23.00 to 25.00
Old steel boiler plate	9.00 to 9.50
Malleable iron (railroad)	11.75 to 12.00
Axle turnings	8.00 to 8.50
Steel axles	18.00 to 19.00
Malleable iron (agricultural)	9.00 to 9.50
Heavy steel	11.00 to 11.25
Country mixed steel	9.00 to 9.50
Bundled sheet scrap	8.00 to 8.50

Net Tons

No. 1 R. R. wrought	$11.50 to 12.00
No. 1 busheling	9.75 to 10.00
No. 1 machine cast	10.50 to 11.00
No. 1 dealers' wrought	9.00 to 9.50
Machine shop turnings	4.00 to 4.25
Pipes and flues	7.50 to 8.00
Wrought drillings	4.00 to 4.25
Cast borings	5.75 to 6.25
Stove plate	7.75 to 8.25
Wrought iron arch bars	16.00
Wrought iron piling plate	14.00

CHICAGO

(Delivered in consumers' yards.)

Gross Tons.

Old car wheels	$13.50 to 14.00
Old iron rails	13.75 to 14.25
Rerolling rails (5 ft. and over)	12.00 to 12.50
Old steel rails (3 ft. and und.)	11.00 to 11.50
Frogs, switches and guards	10.50 to 11.00
Heavy melting steel	10.50 to 11.00
Shoveling steel	10.00 to 10.50

Net Tons.

No. 1 R. R. wrought	$10.50 to 11.00
No. 2 R. R. wrought	9.75 to 10.25
Arch bars and transoms	13.50 to 14.00
Knuckles, couplers and springs	10.75 to 11.25
Shafting	14.25 to 14.75
Iron car axles	19.50 to 20.00
Steel car axles	16.50 to 17.00
Locomotive tires	12.00 to 12.50
Dealers' forge	10.00 to 10.50
Pipe and flues	7.25 to 7.75
No. 1 cast	10.75 to 11.25
No. 1 busheling	8.50 to 9.00
No. 2 busheling	6.50 to 7.00
No. 1 boiler cut	8.25 to 8.75
Boiler punchings	12.00 to 12.50
Cast and mixed borings	4.50 to 5.00
Machine shop turnings	4.75 to 5.25
Railroad malleable	11.00 to 11.50
Agricultural malleable	10.00 to 10.50
Angle bars, splices, etc., iron	13.50 to 14.50
Angle bars, steel	10.00 to 10.50
Stove plate and light cast scrap	8.75 to 9.25

NEW YORK

Gross tons, New York dealers' prices at tidewater, usually, for Eastern Pennsylvania delivery:

Old car wheels (nominal)	$11.00 to 11.50
Steel axles	15.00 to 15.25
Old steel shafting	14.00 to 14.25
No. 1 heavy melting steel	9.25 to 9.50
No. 1 R. R. wrought	12.00 to 12.50
Wrought pipe (not galvanized)	8.25 to 8.75
Cast borings	5.50 to 5.75
Machine shop turnings (nom.)	5.50 to 5.75
Heavy cast	11.25 to 11.50

Stove plate	$7.50 to 7.75
Grate bars (nominal)	6.00 to 6.50

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City, and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City, and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City, and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City, and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York; to Jersey City, $1.00 from New York; to Newark, $1.10 from New York.

CINCINNATI

Gross Tons.

Old iron rails	$11.50 to 12.00
Old steel re-rolling	10.00 to 10.50
Old iron axles	16.00 to 16.50
Heavy melting scrap	9.50 to 10.00
Relaying rails	18.75 to 19.25

Net Tons.

Old No. 1 R. R. wrought	$9.00 to 9.50
Bundled sheet scrap	5.50 to 6.00
No. 1 yard wrought	6.75 to 7.25
No. 1 machine cast	9.50 to 10.00
No. 1 busheling	7.00 to 7.50
Stove plate	6.75 to 7.25
Machine shop turnings	5.00 to 5.50
Cast borings	4.50 to 5.25
Heavy turnings	5.25 to 5.75
Mixed cast	7.75 to 8.25
Breakage	5.50 to 6.00
Malleable	7.00 to 7.50

BIRMINGHAM

Old iron axles, (light)	$15.00 to 15.50
Old steel axles, (light)	15.00 to 15.50
Old iron rails	13.50 to 14.00
No. 1 R. R. wrought	12.00 to 12.50
No. 2 R. R. wrought	10.00 to 10.50
No. 1 country wrought	9.50 to 10.00
No. 2 country wrought	8.50 to 9.00
No. 1 machinery cast	9.50 to 10.00
No. 1 steel scrap	10.50 to 11.00
Tram car wheels	10.50 to 11.00
Standard car wheels	12.00 to 12.50
Light cast and stove plate	8.25 to 8.75

BUFFALO

(Gross tons.)

Heavy melting steel	$11.00 to 11.50
No. 1 R. R. wrought scrap	13.00 to 13.50
No. 1 R. R. and mch. cast scrap	13.00 to 13.50
Old steel axles	17.00 to 17.50
Old iron axles	22.50 to 23.00
Car wheels	13.00 to 13.50
Railroad malleable scrap	12.50 to 12.75
Wr'ght iron and soft steel turn.	6.00 to 6.50
Cast iron borings	6.00 to 6.50
Low phos. steel scrap	16.50 to 17.00
Old iron rails	15.00 to 15.50
Boiler plate, sheared	13.00 to 13.75
Bundled sheet scrap	8.50 to 9.00
Stove plate (net ton)	9.75 to 10.00
Locomotive grate bars	10.00 to 10.50
No. 1 busheling scrap	10.50 to 11.00
No. 2 busheling scrap	8.00 to 8.50

ST. LOUIS

(Dealers' buying prices.)

Gross Tons

Old car wheels	$11.50 to 12.00
Old iron rails	11.00 to 11.50
Rerolling rails (5 ft. and over)	12.00 to 12.25
Old steel rails (3 ft. and und.)	10.50 to 11.00
Light sec. relayers (45 pounds and und.) subject to inspec.	23.50 to 24.50
Relaying rails, subject to inspec.	23.50 to 24.50
Frogs, switches and guards	10.50 to 11.00
Heavy melting steel	9.50 to 10.00
Shoveling steel	9.25 to 9.75

Net Tons

No. 1 railroad wrought	$9.00 to 9.50
No. 2 railroad wrought	8.25 to 8.75
Arch bars and transoms	12.50 to 13.00
Knuckles, couplers, springs	9.50 to 10.00
Shafting	13.00 to 13.50
Steel car axles	15.00 to 15.50
Iron car axles	17.50 to 18.00
Locomotive tires	9.50 to 10.00
Pipe and flues	5.50 to 6.00
Tank iron and cut boilers	6.50 to 7.00
No. 1 cut busheling	7.50 to 8.00
Cast and mixed borings	3.50 to 4.00
Machine shop turnings	5.00 to 5.50
Railroad malleable	7.50 to 8.00
Agricultural, malleable	6.50 to 7.00
Stove plates	7.00 to 7.50
Angle splice bars (iron)	10.00 to 10.50
Angle splice bars (steel)	9.50 to 10.00

Store Prices

CINCINNATI

Steel bars, 2.00c; iron bars, 2c; plates and shapes, 2.10c; sheets, blue annealed No. 10, 2.40c; black, No. 28, 2.85c; galvanized, No. 28, 3.95c; cold rolled shafting, round, square, hexagon and flat, 50 off.

CLEVELAND

Steel bars, 2.00c; plates and shapes, 2.10c; iron bars, 2.00c; sheets, No. 10 blue annealed, 2.40c; No. 28 black, 2.85c; No. 28 galvanized, 3.95c.

CHICAGO

Steel bars, 1.85c; iron bars, 1.85c; hoops, 2.50c; shapes and plates, 1.95c; No. 10 blue annealed sheets, 2.25c; black, No. 28, 2.90c; galvanized, No. 28, 4.15c.

PHILADELPHIA

Steel bars 2.05c to 2.10c; structural shapes, 2.00c to 2.10c; plates, 2.00c to 2.10c.

NEW YORK

Steel bars, 2.05c; structural shapes, 2.15c; plates, 2.15c.

Tin Plate Mill Workers Strike

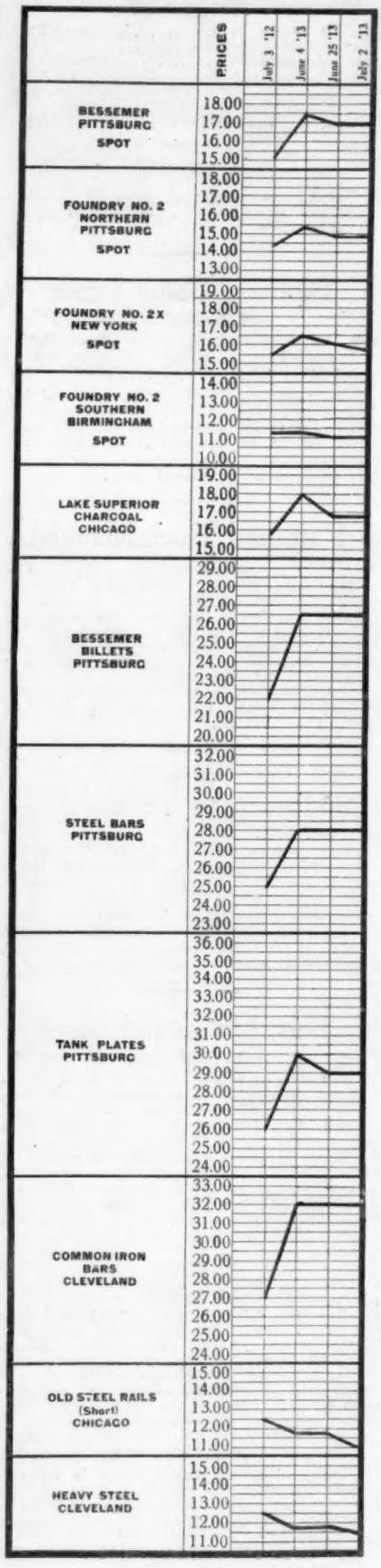
Pittsburgh, Pa., July 2. (By wire.)—About 400 men employed at the Steubenville, O., plant of the Phillips Sheet & Tin Plate Co. went on a strike July 1, because owners of the mill declined to sign wage scales from the Amalgamated Association of Iron, Steel and Tin Workers. Operations at the plant were reduced considerably as a result of the trouble. Some violence has occurred.

Building Miners' Home

Marquette, Mich., June 30.—M. A. Hanna & Co., of Cleveland, have embarked upon a house-building program at the Ravenna location in the Crystal Falls district of the Menominee. A contract for the erection of ten dwellings has been awarded. Many more houses will be constructed and a few years hence will see a good-sized town on the map. The community will be the home of the men employed at the Ravenna and Carpenter mines, both now in course of development, and both assured of being among the largest producers on the range. Due to a reported flaw in the title to part of the Hilltop-Victoria property, the Struthers Furnace Co. of Cleveland is said to have suspended the negotiations whereby it was to have acquired the tract under lease and to have proceeded with its exploration and development. There is doubt now that the deal will be consummated.

It is expected that the Prest-O-Lite Co. will increase its plant in Long Island City by the erection of a new building, 75 x 100 feet, two stories, to cost about $4,000.

PRICE CHART



Electrically-Operated, Canadian Rolling Mill

This Plant Represents the Highest Development of Modern Rolling Mill Practice and Includes Blooming, Billet and Combined Rod and Merchant Bar Mills

In the last decade wonderful advances have been made in rolling mill design and operation. Electric control has greatly simplified the manipulation of the steel in its passage through the rolls, and tables, shears, etc., to a large extent, now are electrically-driven. The utilization of blast furnace and coke oven gas in large internal combustion engine units has simplified the power problem and has effected great economies in steel works operations. The application of motor drive to rolling mills closely followed the introduction of the gas engine and the most notable example of such a combined installation is at the Gary, Ind., works of the United States Steel Corporation. Since this plant has been in operation, numerous similar installations were made in this country and motor drive for rolling mills is now being extensively adopted.

Drive for Reversing Mills

Considerable hesitancy was manifested by rolling mill engineers and operators over the adoption of motors for driving reversing mills, although in 1907 a universal plate mill at the South Chicago works of the Illinois Steel Co. was successfully placed in operation with this type of drive. Owing to the tremendous fluctuating load that must be carried by the power unit of a reversing blooming mill, the adoption of motor drive for breaking-down ingots has not been so rapid as that for other rolling mill operations. Recent hydro-electric power development has introduced another factor of economy that merits the careful consideration of steel works and rolling mill operators, as the cost of current compares favorably with that generated at power plants utilizing blast furnace and coke oven gas under the most favorable conditions.

Owing to the tremendous expense involved in making changes in the type of operating units for rolling mills, existing plants that have been improved to conform to the more recent prac-

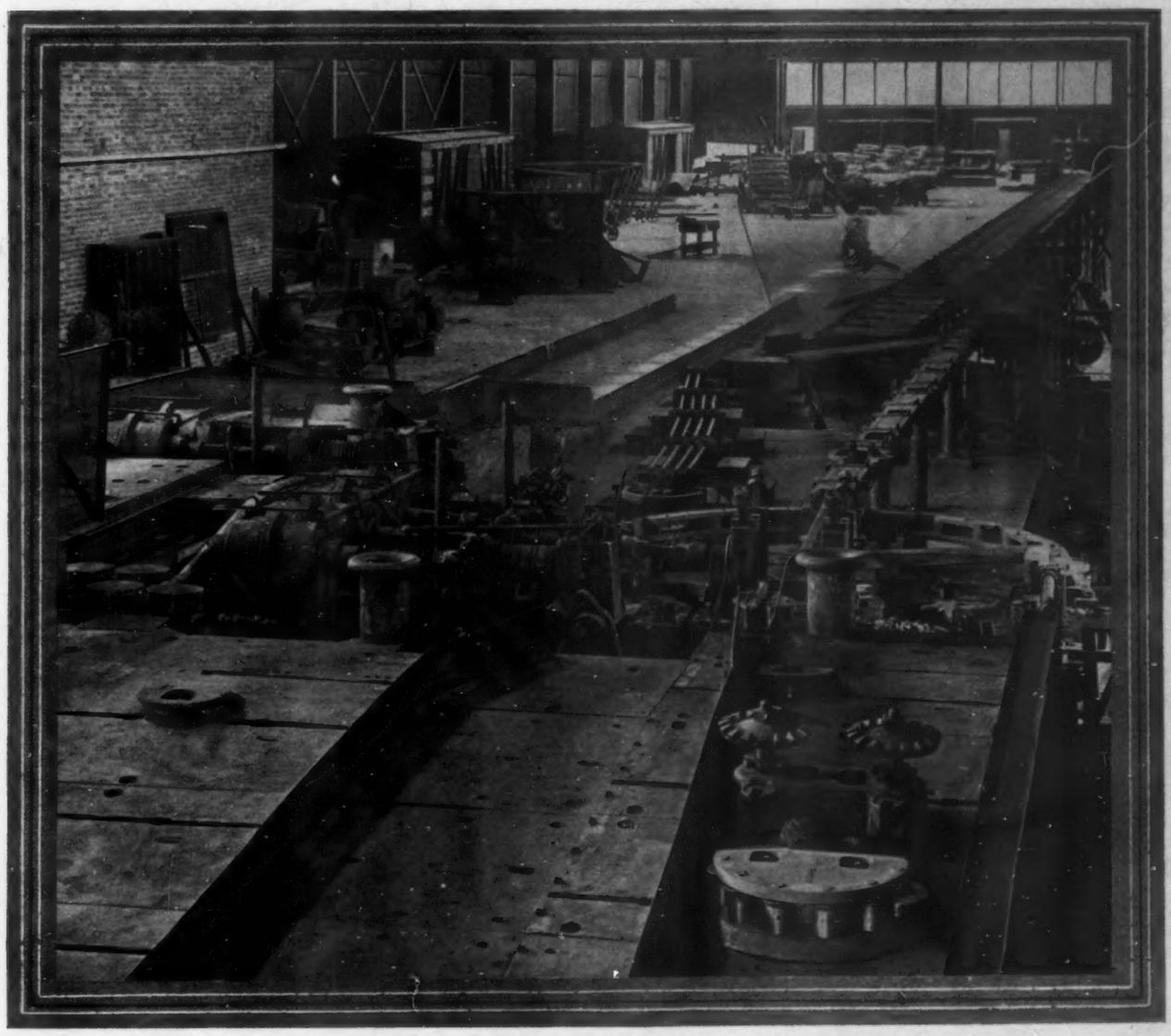


FIG. 1—FINISHING STANDS OF CONTINUOUS BAR AND MERCHANT MILL; THE COOLING BED ALSO IS SHOWN AT THE RIGHT

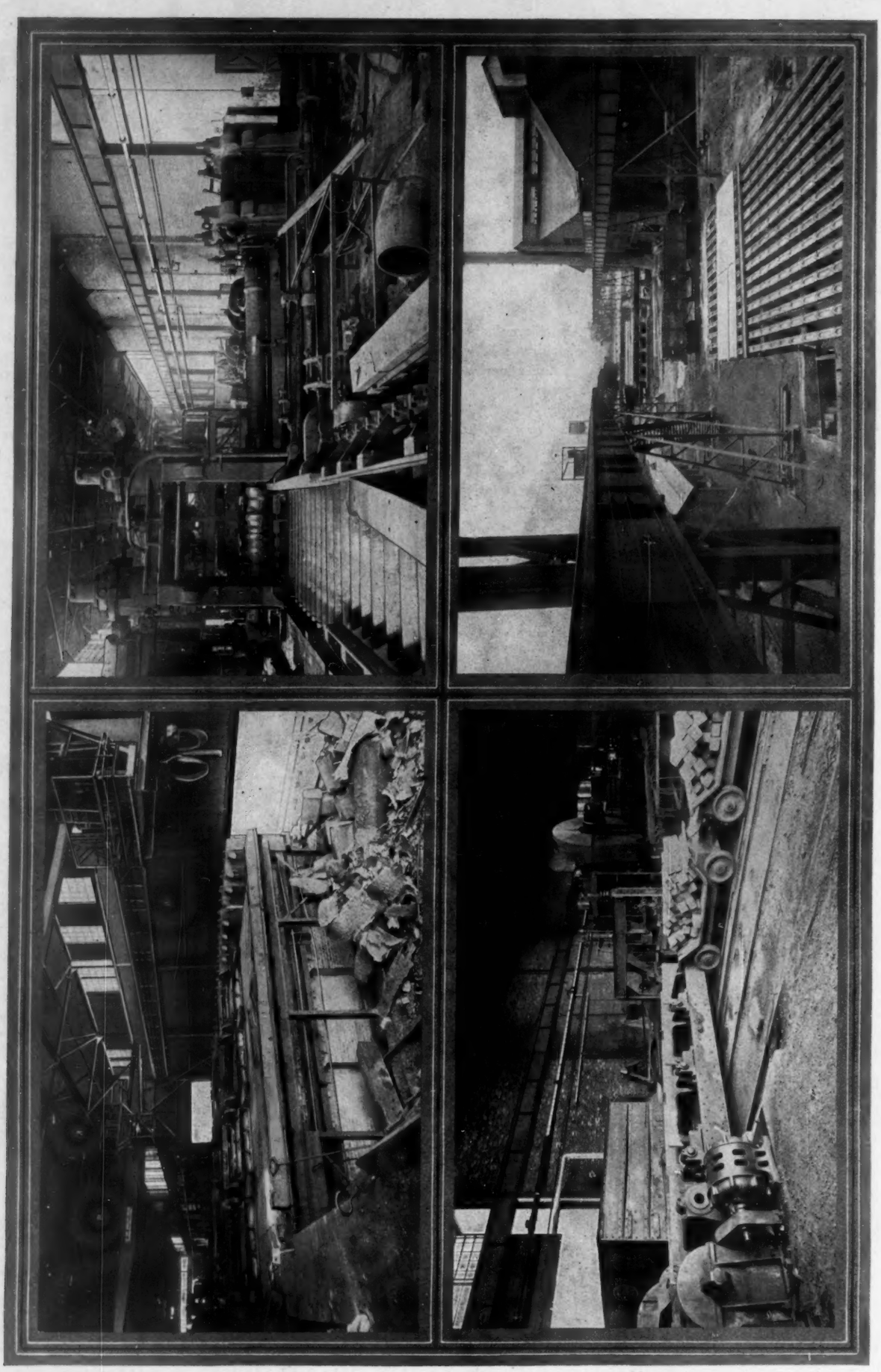


FIG. 2—THE SOAKING PITS
FIG. 3—THE MOTOR-DRIVEN REVERSING BLOOMING MILL
FIG. 4—TILTING SECTION OF BILLET MILL APPROACH TABLE LOWERED
FIG. 5—BILLET MILL, COOLING BED AND YARD CRANE RUNWAY

tice are comparatively limited, although nearly all of the late rolling mill installations embody some of the features previously mentioned.

At Hamilton, Ont., the Steel Company of Canada, Ltd., recently has placed a new plant in operation consisting of a blooming mill, continuous billet mill and continuous rod and merchant bar mill, which combines all of the latest improvements in rolling mill design and operation and as a unit, it is claimed to reach the highest development of more recent steel rolling practice. The features of these works are summarized as follows:

Electrically-driven throughout.

Power is purchased from a hydro-electric plant, the current being transmitted a distance of nearly 40 miles.

The reversing blooming mill is motor-driven.

The motor-driven continuous billet mill consists of four stands, necessitating larger reductions for the four passes than is customary in mills of six and eight stands of rolls.

The combination continuous rod and merchant bar mill is the first of its type to be installed on the North American continent.

Equipment for cooling rods, whereby they are annealed and the formation of scale is reduced to the minimum.

Steel for this new plant is produced in six open-hearth furnaces, two of 80 tons, two of 35 tons and two of 25 tons capacity, the monthly output averaging approximately 15,000 tons. The two 80-ton furnaces have been added recently to meet the requirements of the new rolling mill and have been installed in an addition to the existing open-hearth building. Hot metal is supplied by two blast furnaces, the open-hearth charges consisting of 55 per cent of scrap and 45 per cent of molten pig. Prior to the operation of the new plant, 6 x 6-inch ingots were cast, approximately 5 feet long, which were broken-down in a roughing mill, this practice and the employment of small ingots, which were the size of large billets or small blooms, having entirely eliminated the blooming operation. The ingots for the new mill are 15 x 17 inches in section and weigh approximately 4,200 pounds.

A plan of the recently completed plant, showing the arrangement of the mills, is illustrated in Fig. 14, and a descriptive layout with all of the equipment indicated, is shown in Fig. 16. It will be noted that the blooming and billet mills and the combined continuous rod and merchant bar mill are located in separate buildings paralleling each other and divided by a crane runway, extending at right angles to these structures, which commands the billet cooling bed, loading track and the large conveyor for the continuous billet heating furnace for the rod and merchant bar mill. Both buildings are of steel construction, the one containing the blooming and billet mills being 60 x 475 feet and the rod and merchant mill, 85 x 550 feet.

After casting, the ingots are conveyed from the open-hearth department over a standard gage track to one end of the blooming mill building, where the molds are stripped by a 75-ton, 63-foot span stripping crane, installed by the Alliance Machine Co., Alliance, O. From the ingot mold cars the ingots are transferred to the soaking pits, Fig. 2, by a 10-ton soaking pit crane, installed by the

FIG. 6—THE MOTOR DRIVEN CONTINUOUS BILLET MILL

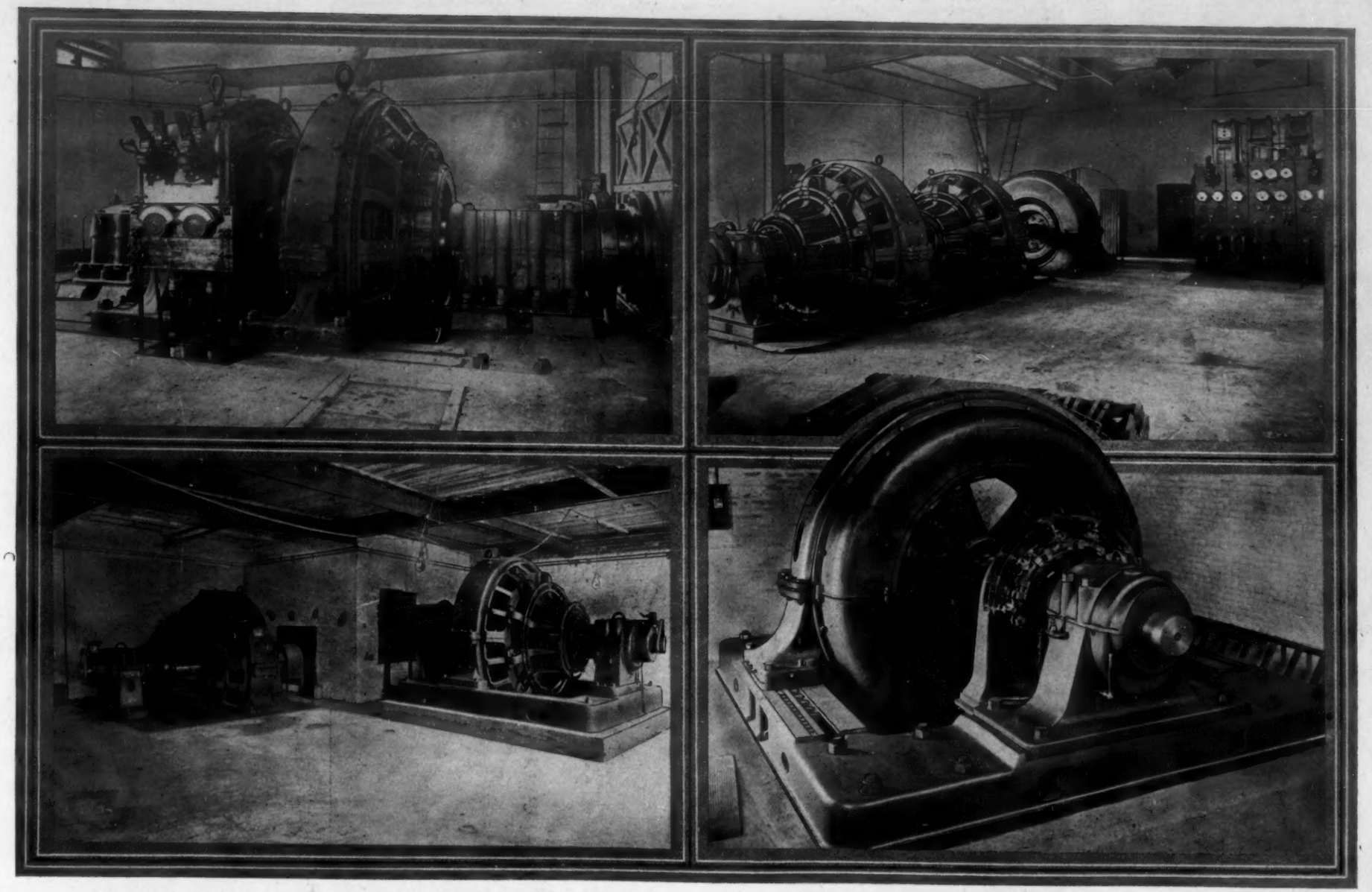


FIG. 7—THE TWIN-ARMATURE REVERSING BLOOMING MILL MOTOR

FIG. 8—MOTOR GENERATOR SET FOR ROD AND MERCHANT MILL MOTORS

FIG. 9—MOTORS FOR OPERATING THE CONTINUOUS ROD AND MERCHANT BAR MILL

FIG. 10—CONTINUOUS BILLET MILL MOTOR

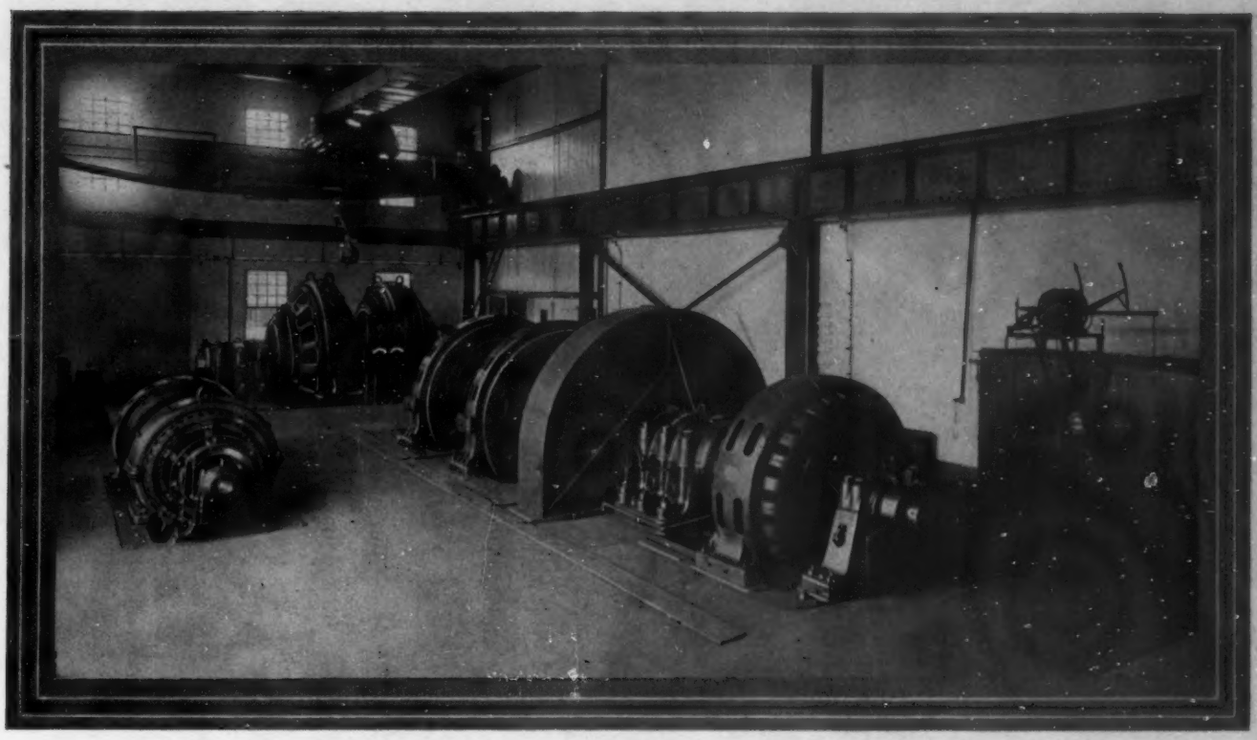


FIG. 11—BLOOMING MILL POWER STATION, SHOWING THE MOTOR-GENERATOR-FLYWHEEL SET IN THE FOREGROUND AND THE BLOOMING MILL MOTOR IN THE BACKGROUND

Morgan Engineering Co., Alliance, O. The two soaking pit furnaces each have four holes, 5 feet x 8 feet, 6 inches, which have a capacity of eight ingots each. These furnaces are built almost entirely above the floor level, permitting easy access for repairs. Producer gas is used for heating, this fuel being generated by four Morgan producers located in a separate building contiguous to the blooming and continuous billet mills. The covers of the soaking pit are hydraulically-operated from a platform on a level with the tops of the furnaces.

From the soaking pits the ingots are delivered by a crane to the approach table of the two-high, 34-inch, reversing, motor-driven blooming mill, which was designed by the Morgan Construction Co., and built at the Lloyd-Booth plant of the United Engineering & Foundry Co., Pittsburgh. When breaking-down ingots into blooms for the billet mill the steel is given 18 passes, but when

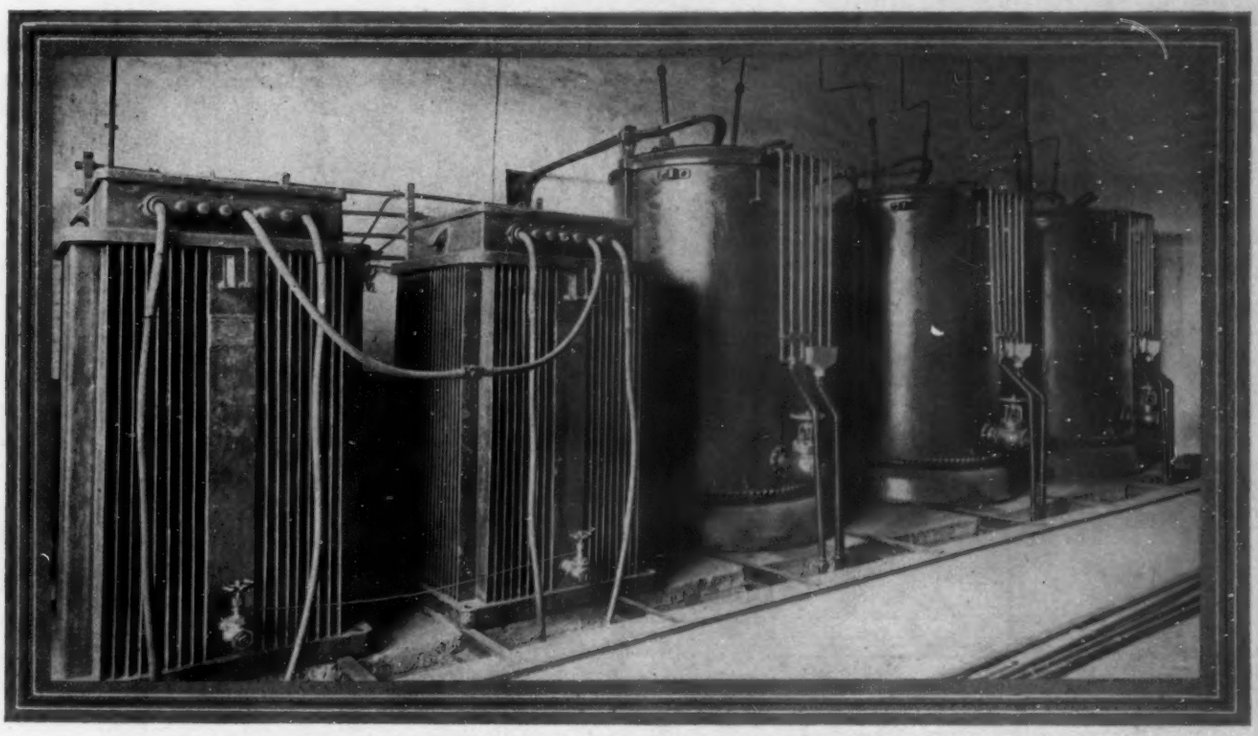


FIG. 12—THE TRANSFORMERS FOR STEPPING-DOWN THE CURRENT FROM 44,000 TO 2,200 AND 220 VOLTS RESPECTIVELY

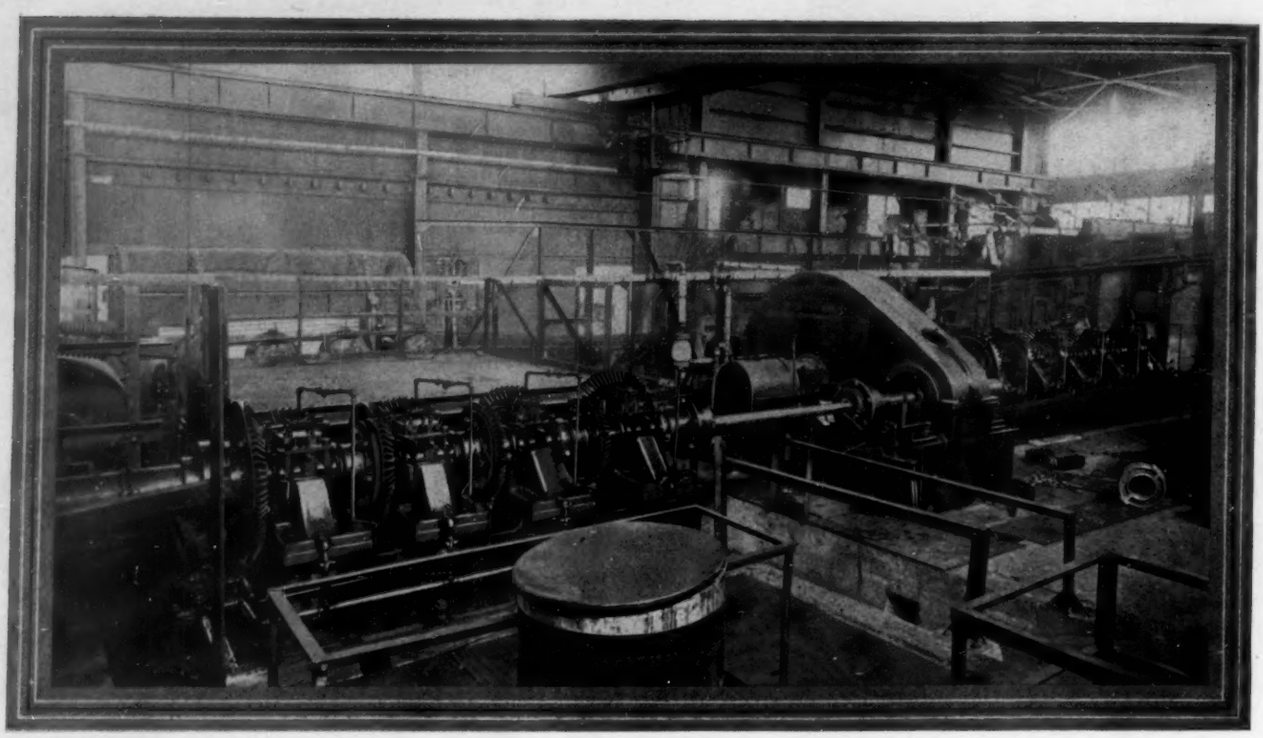


FIG. 13—BEVEL GEAR DRIVE FOR 10 OF THE MORGAN CONTINUOUS ROD AND MERCHANT MILL STANDS

breaking-down for 6 x 6-inch blooms, the number of passes is reduced to 15. The blooming mill approach table is operated by a 30-horsepower, direct current motor and the two blooming mill tables are driven by 100-horsepower motors. The side guards of the mill are hydraulically-operated. The blooming mill is shown in Fig. 3, but the motor

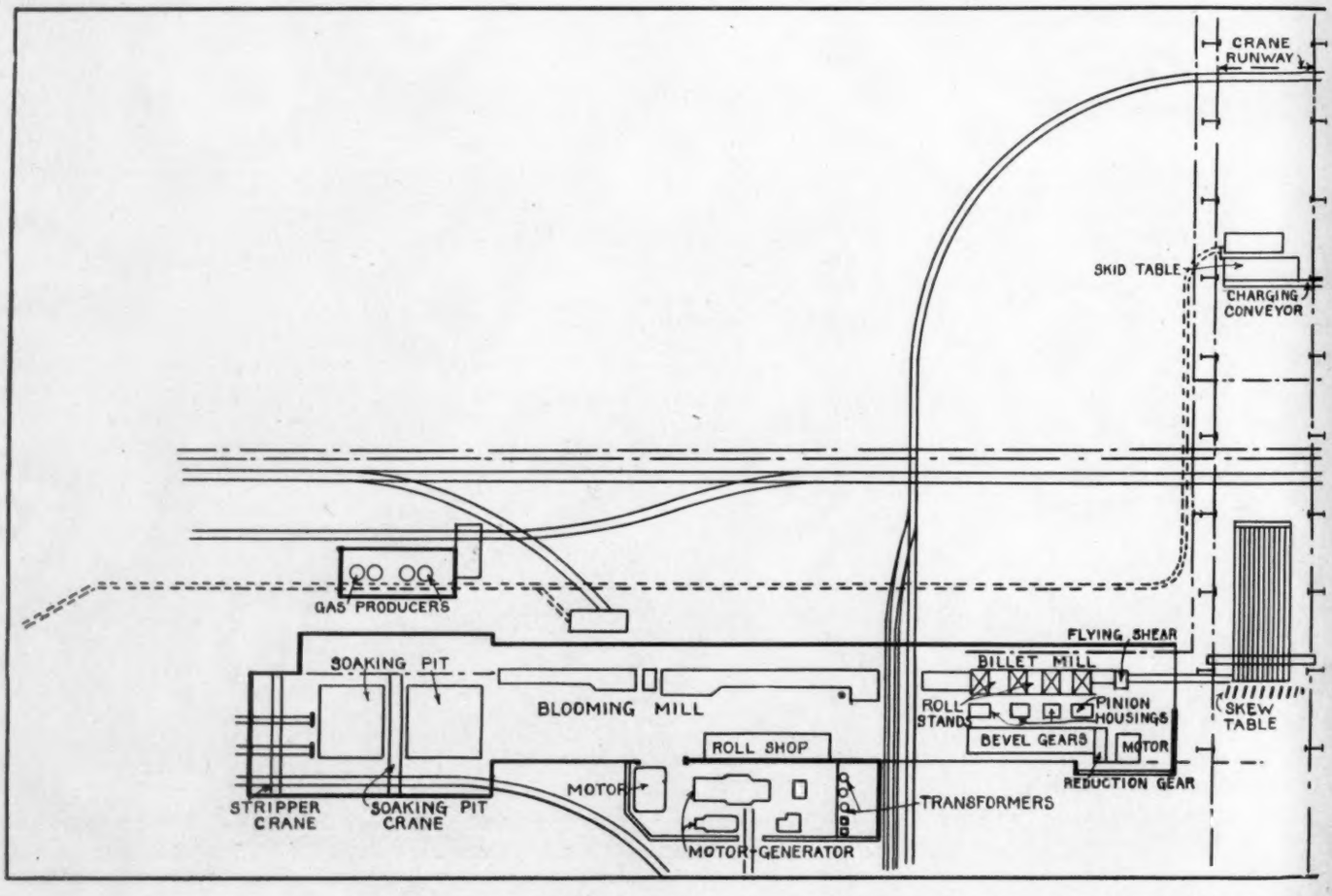


FIG. 14—PLAN, SHOWING THE GENERAL ARRANGEMENT OF THE BLOOM AND BILLET MILL

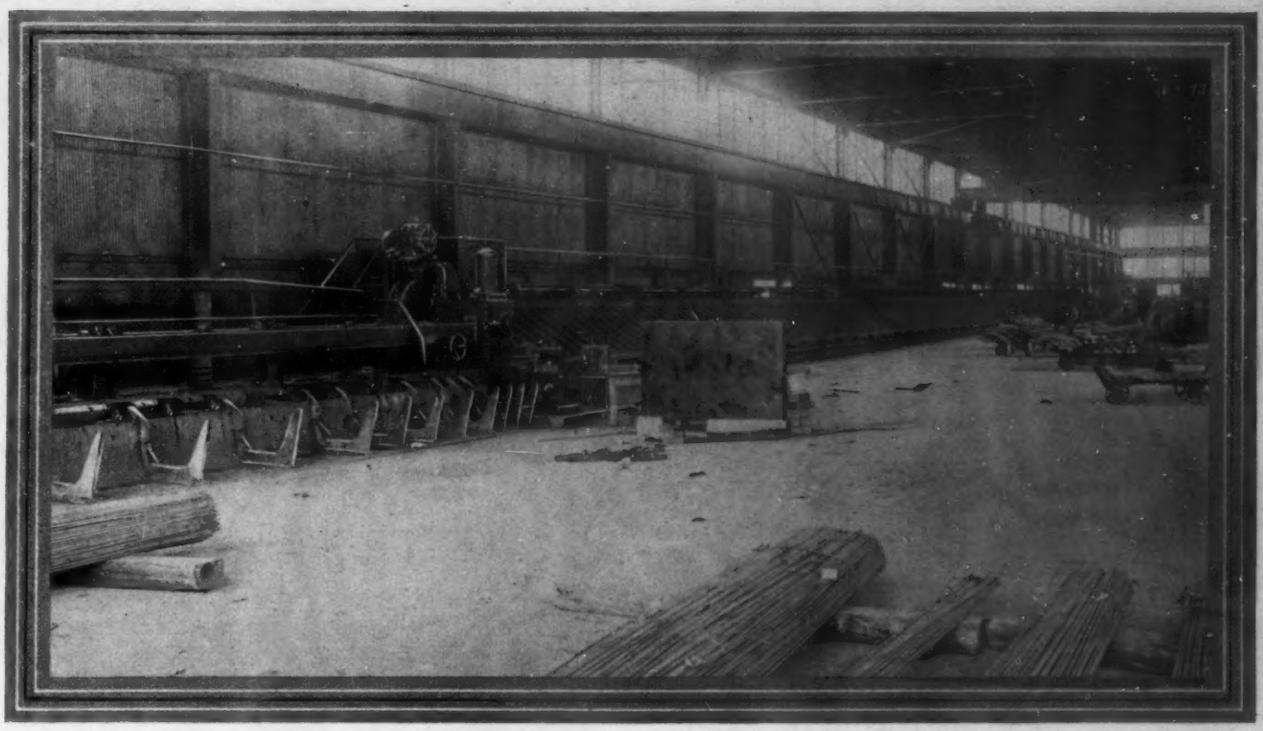
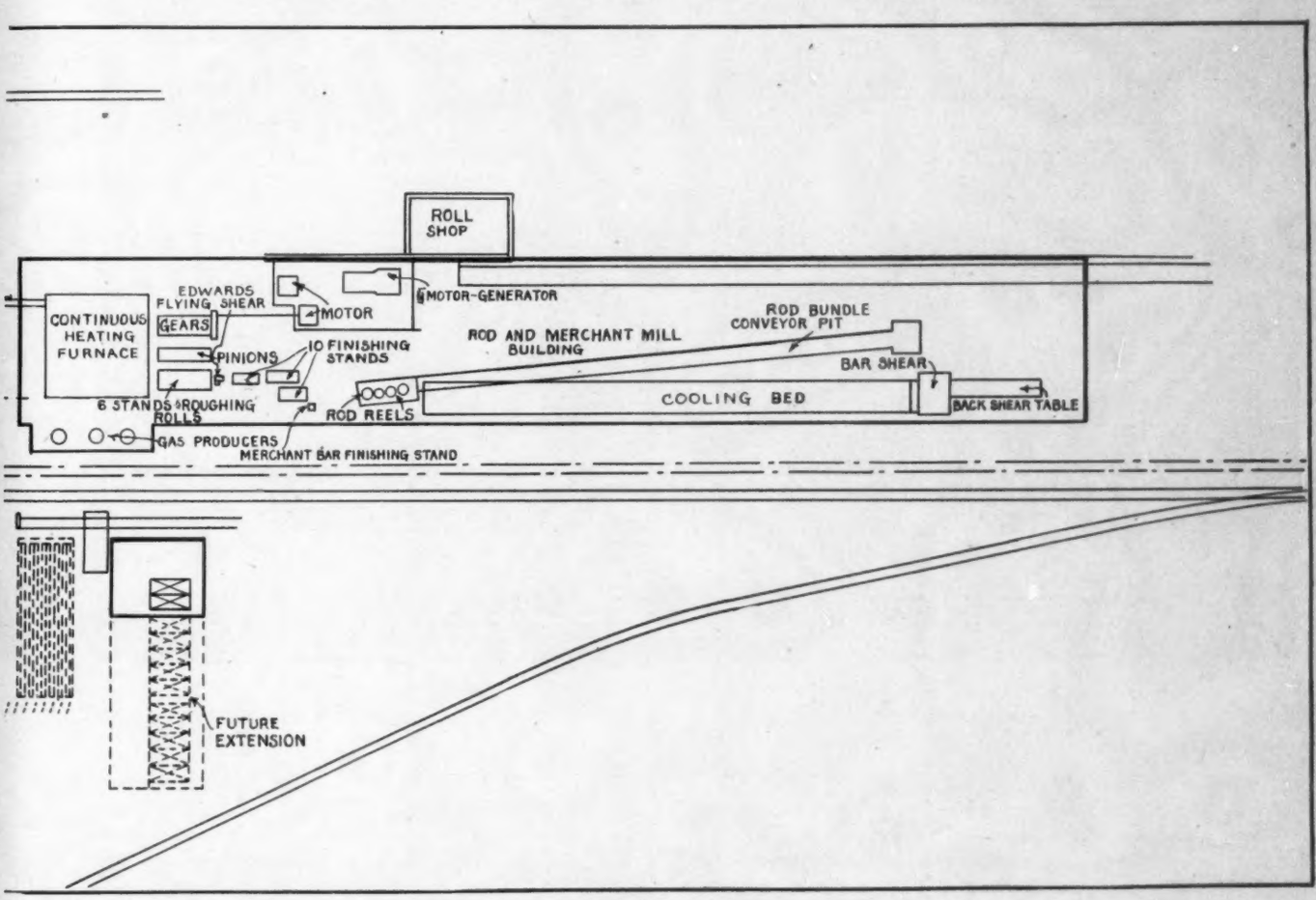


FIG. 15—ESCAPEMENT TYPE COOLING BED IN THE MERCHANT MILL

cannot be seen in this view, being located in a power station adjoining the blooming mill building. In line with the blooming mill is the electrically-operated 18-inch continuous billet mill, which consists of four stands of rolls, shown in Fig. 6. The blooms are cut by a 10 x 10-inch vertical bloom shear, which is electrically-driven, but



AND THE ROD AND MERCHANT MILL OPERATED BY THE STEEL CO. OF CANADA, LTD.

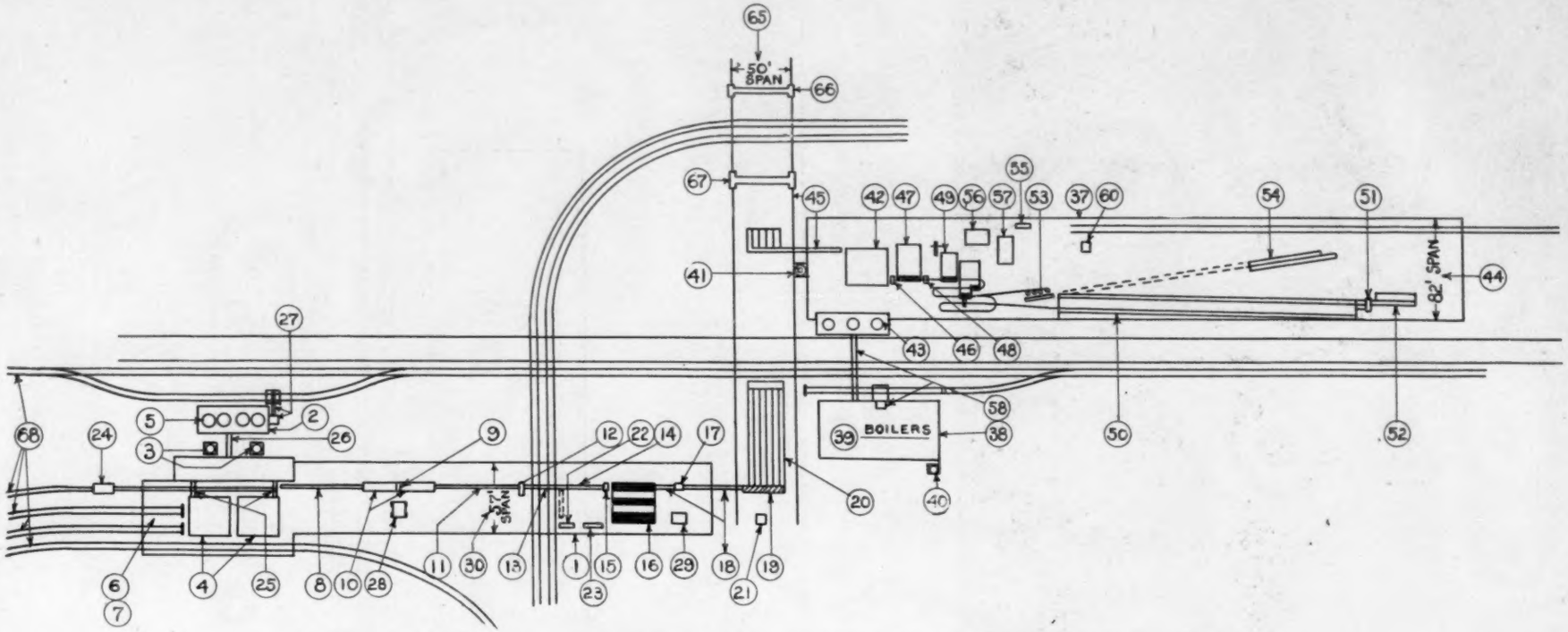


FIG. 16—DESCRIPTIVE LAYOUT OF THE BLOOM, BILLET, ROD AND MERCHANT MILLS AND YARD

Blooming and Billet Mill.

1.—Blooming and billet mill building, including soaking pit building.
2.—Gas producer house.
3.—Two 54-inch x 90-foot stacks for pit furnaces.
4.—Two four-hole pit furnaces and underground flues.
5.—Four 10-foot gas producers and steel flues.
6.—Charging crane for soaking pit building.
7.—Stripper crane for soaking pit building.
8.—Ingot run table.
9.—34-inch, two-high blooming mill.
10.—Two tilting tables for blooming mill.
11.—Shear table.
12.—10 x 10-inch vertical bloom shear.
13.—Swing tables.
14.—Stationary table.
15.—Power crop shear.
16.—18-inch continuous billet mill.
17.—Edwards steam flying shear.
18.—Flying shear table.
19.—Skew table.
20.—Cooling pit.
21.—Lever scrap shear.
22.—26-inch roll lathe.
23.—44-inch roll lathe.
24.—Ingot car and tilter.
25.—Bridges over ingot car track.
26.—Bridge from soaking pit building to gas producer house.
27.—Coal elevator and conveyor.
28.—Motor for blooming mill.
29.—Motor for 18-inch mill.
30.—20-ton crane for blooming mill building

Rod and Merchant Mill.

37.—Rod and merchant mill building, including gas producer house and roll shop.
38.—Boiler house.
39.—Boilers.
40.—Stack for boilers.
41.—54-inch x 90-foot stack for heating furnace.
42.—30 x 24-foot heating furnace and underground flues.
43.—Three 10-foot gas producers.
44.—10-ton crane.
45.—Furnace charging conveyor.
46.—Feed roll and dividing shear.
47.—12-inch continuous roughing train.
48.—Edwards intermediate flying, swing-knife shear.
49.—10-inch finishing train.
50.—Single escapement type cooling bed.
51.—Bar shear.
52.—Back shear table.
53.—Rod reels.
54.—Rod bundle conveyor.
55.—14-inch roll lathe.
56.—Motor for roughing mill.
57.—Motor for finishing mill.
58.—Coal elevator and conveyor.
59.—Rod trucks.
60.—Scrap shear.

Yard.

65.—Yard crane runway.
66.—Five-ton yard crane.
67.—15-ton yard crane.
68.—Railroad tracks.

has hydraulic movements. If the blooms are intended for the billet mill, they are conveyed by the electrically-operated approach table to the first stand of billet mill rolls. Blooms to be rolled into billets are 3½ x 3⅛ inches in section. However, when larger blooms are being rolled for one of the company's other works or for outside consumption, a section of the billet mill approach table is tilted and the blooms are discharged onto buggies from which they are loaded into freight cars in the yard. The crop ends of the blooms are discharged into a bucket in a concrete pit, from which the bucket is lifted by the mill crane. A standard gage track at right angles to the length of the building extends the width of the plant between the bloom shear and the continuous billet mill. Supplies, spare parts, etc., are received over this track and to permit the ingress and egress of cars, as well as loading the blooms intended for the billet mill onto buggies, a section of the billet mill approach table is so constructed that it can be tilted through an arc of 90 degrees. This section of the table, in a tilted position, is shown in Fig. 18 and this view also illustrates the motor-driven bloom shear and one of the buggies which conveys the blooms into the yard. Fig. 4 shows this section of the billet mill approach table lowered and in position to receive blooms from the bloom shear. This section of the table is counterbalanced and the tilting mechanism is operated by a 10-horsepower motor. When the approach table is tilted to clear the track, one end swings into a concrete pit.

The billet mill is of the Morgan continuous type and consists only of four stands of rolls, which marks a radical departure in continuous billet mill construction, as the majority of mills of this type contain six and eight stands of rolls. The amount of reduction in

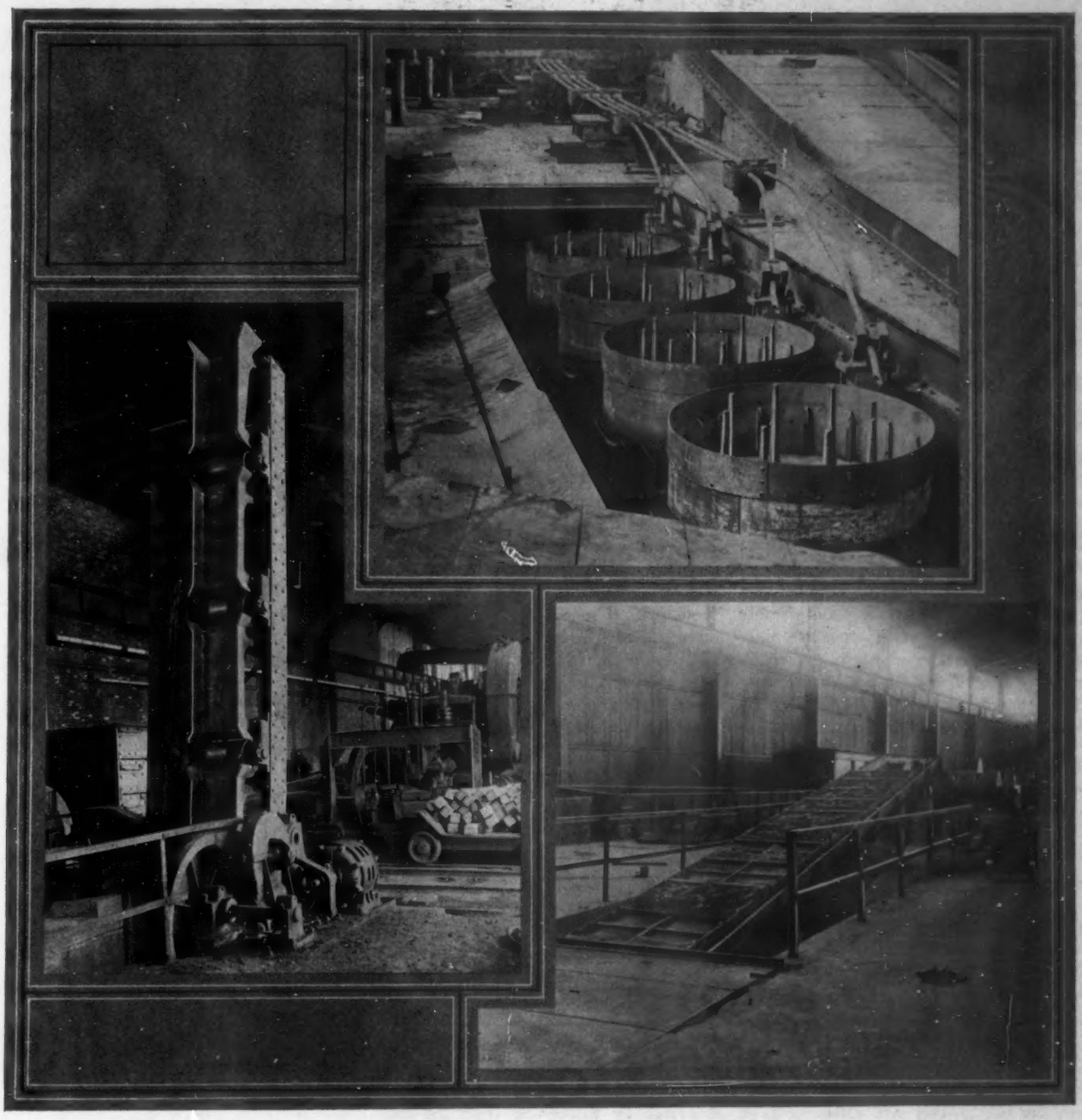


FIG. 17—THE FOUR ROD REELS

FIG. 18—SECTION OF BILLET MILL APPROACH TABLE TILTED

FIG. 19—DISCHARGE END OF ROD BUNDLE CONVEYOR

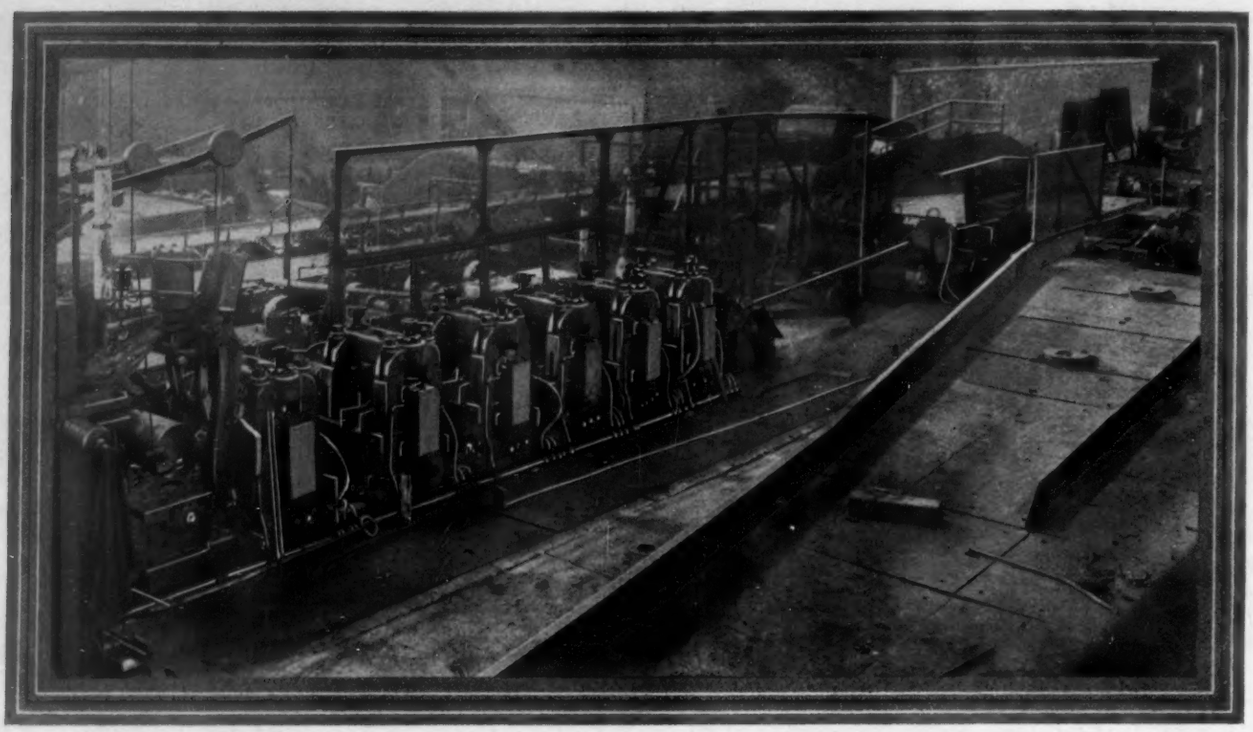


FIG. 20—ROUGHING STANDS OF THE CONTINUOUS ROD AND MERCHANT MILL

the mill of the four-stand type over that of the six or eight-stand type is considerably increased per pass. When the bloom enters the first stand of rolls, the amount of reduction is 35.5 per cent; second stand, 28.5 per cent; third stand, 34.5 per cent, and fourth stand, 25 per cent. This reduction is considerably larger than that of continuous billet mills now generally in operation, which rarely exceed 27 or 28 per cent during the earlier passes. The billets are rolled into 1¾, 2 and 2½-inch sections, according to the size of the finished product, for which they are intended. The mill also is equipped to roll 2 x 8-inch flats. When intended for finishing by the combined continuous rod and merchant bar mill, the billets are cut to 30-foot lengths and for the 10-inch hand mill, to 15-foot lengths by an Edwards flying shear located at the end of the billet mill runout table. From the shear table the billets are delivered to a skew table, operated by a 75-horsepower motor and onto the cooling bed. The cooling bed straightening device and the push-off each are operated by 50-horsepower, direct current motors.

Commanding the cooling bed and the charging conveyor of the Morgan continuous billet heating furnace is a 40-foot span, 15-ton Shaw crane operating on a 400-foot runway, as illustrated in Fig. 5. In the foreground is shown the billet mill cooling bed and near the extreme end of the runway is the billet conveyor for the continuous billet heating furnace. The 30-foot billets are delivered by this crane from the cooling bed to the heating furnace charging conveyor, while the 15-foot billets are loaded onto cars for shipment to the company's 10-inch mill. It will be noted that the crane runway extends at right angles to the blooming and billet and rod and merchant mill buildings.

From the conveyor the billets are delivered to a 30 x 24-foot Morgan continuous heating furnace, which is producer gas-fired. After being discharged, the billets enter the roughing stands of the finishing mill, being conveyed by electrically-operated rollers. The combined continuous rod and merchant mill consists of 17 stands of rolls and is the first of its type that has been installed. It effects an ideal combination, as it permits of rolling the rods and merchant bars on one mill by merely taking out certain of the roughing and finishing stands, depending upon the product to be rolled. The mill consists of one 12-inch continuous roughing train and a 10-inch finishing train. The roughing train contains six stands of rolls and the finishing train, 11 stands of rolls. The roughing stands are placed tandem, as shown in Fig. 20, the six stands for the first passes being shown in the foreground, while only one stand for the next four passes was in position when this photograph was made. A view of the finishing stands and the cooling bed is shown in Fig. 1. When rolling rods, 1¾-inch, 30-foot billets are used. The billets from the heating furnace are first passed through the six roughing stands and then through four finishing stands in line with the roughing train. The steel is looped and passes through two continuous finishing stands placed tandem. The piece then is looped again and passes through four additional, straight continuous finishing stands into the reel pipe and onto one of the four reels for coiling. The 17th or last finishing stand is cut out entirely, being used only when rolling merchant bars.

(*Continued on page 32*)

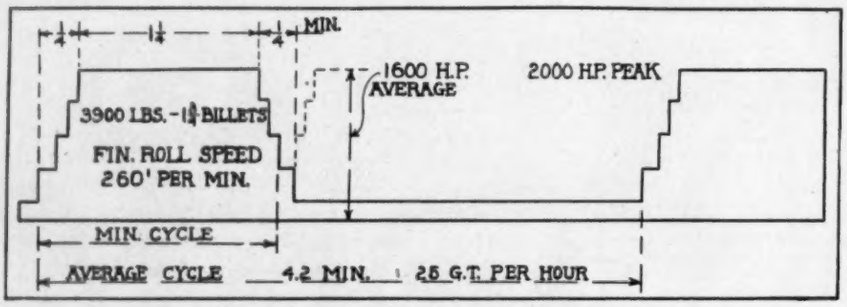


FIG. 21—BILLET MILL POWER DIAGRAM

Many Iron and Steel Specifications Revised

Report of the Proceedings of the Annual Meeting of the American Society for Testing Materials—Heat-Treatment of Steel

That the American Society for Testing Materials is constantly alive to the latest requirements of iron and steel manufacture, both in practice and testing methods, was reflected by the deep interest manifested in the heat-treatment of steel, at the sixteenth annual meeting of this organization, held at the Hotel Traymore, Atlantic City, June 24 to 28. Several papers on this subject were presented, which represented a large amount of original investigation and although intended merely as preliminary reports, they foreshadowed the obtaining of data that ultimately will reveal the influence of mass in the heat-treatment of steel products. That a constant effort is being made to have the specifications of the Society conform to the latest and best practice, was indicated by the large number of changes made in these standards. A total of 61 committee reports and technical papers was presented at the ten sessions of the meeting, which, as in former years, were largely attended, the registration having closely approached 400.

Report of Committee A-1

A voluminous report was presented by Committee A-1 on Standard Specifications for Steel, which provided for changes in 14 of the present standards and nine new specifications. The membership of the committee during the year was increased from 70 to 93 and the four following additional sub-committees were appointed: Spring Steel, Methods of Chemical Analysis, Methods of Tests and Literary Form. The total number of sub-committees now is 16.

The committee recommended changes in the following specifications: Steel Splice Bars, Structural Steel for Bridges, Structural Nickel Steel and Structural Steel for Buildings, Steel Reinforcing Bars, Steel Axles, Steel Tires, Steel Castings, Lap-Welded and Seamless Steel Boiler Tubes, Automobile Carbon and Alloy Steels, Boiler and Fire-Box Steel, Boiler Rivet Steel, Annealed Steel Forgings and Steel Shapes, Universal Mill Plates and Bars.

The proposed new standard specifications included Medium Carbon Steel Splice Bars, High Carbon Steel Splice Bars and Extra High Carbon Steel Splice Bars, Structural Steel for Ships, Rail-Steel Concrete Reinforcement Bars, Cold Rolled Steel Axles, Wrought Steel, Carbon Steel Wheels for Electric Railway Service and Blooms, Billets and Slabs for Carbon Steel Forgings.

In its report last year the committee announced its purpose to give careful consideration to the revision of the specifications for rails and its expectation to co-operate in that connection with committees of other societies with a view of presenting the best possible recommendations at this meeting. Conditions during the past year, however, were such as to render it inexpedient to proceed with the preparation of proposed revisions of these specifications. The members of the committee hope that during the ensuing year the conditions will be such as to warrant the preparation of revised specifications for both Bessemer and open-hearth steel rails.

Several joint meetings of the various sub-committees interested in steel forgings were held during the year with a view of preparing proposed revised specifications, but since it was not possible to reach a unanimous agreement, it was decided to defer submitting a report until the next annual meeting. Sub-committees have been instructed to report on standard specifications for structural steel for cars, steam pipe and rerolling blooms. The standardization of methods of chemical analysis of steel also has been entrusted to a newly-created sub-committee and questions relating to standard test pieces also are being considered.

Splice Bars

The committee recommended that the title of the present specifications for Steel Splice Bars be changed to Low-Carbon Steel Splice Bars in conformity with the proposed three new specifications submitted. With reference to the specifications for Structural Steel for Bridges the committee recommended that the requirements of castings shall hereafter not be embodied in these specifications, but reference shall be made in that connection to the standard specifications for steel castings.

The title for the specifications for reinforced bars was changed from the present form, Steel Reinforced Bars, to Steel Concrete Reinforcement Bars in order to differentiate them definitely from the new specifications for Rail-Steel Concrete Reinforcement Bars. The specifications for Steel Axles were revised with a view to making them applicable to Carbon Steel Car and Tender Axles subject only to drop test requirements. The specifications for steel castings were thoroughly revised and extended with a view to making specific provision for castings intended for use in ship and in railway rolling stock construction. The specifications for steel tubing were revised to agree with the specifications presented at the recent convention of the Railway Master Mechanics' Association. The title of the specifications for Annealed Steel Forgings was changed to Steel Forgings, inasmuch as the changes made include provision for unannealed forgings. For splice bars, three new standard specifications were presented, namely, for Medium-Carbon Steel, High-Carbon Steel and Extra High-Carbon Steel Splice bars. The sub-committee was unable to reach a unanimous agreement on the subject of camber and accordingly it was decided to make no change in this provision, with the understanding that the sub-committee will make further efforts to reach an agreement. The committee also recommended the cancellation of the standard specifications for Structural Steel for Ships and two new specifications were substituted therefor, namely, Structural Steel for Ships, and Rivet Steel for Ships.

Steel Wheel Tests

During the year a number of tests on steel wheels were conducted under the auspices of the committee on rolled steel wheels and steel tires. The following questions were considered: Mating and grouping, analyses, thermal tests and drop tests. The tests were made at the Altoona, Pa., shops of the Pennsylvania railroad, which procured eight wheels, two from each of the four American manufacturers. Each wheel was analyzed before testing. One wheel of each pair was submitted to the Master Car Builders' standard thermal test. The wheel then was allowed to become cold and was examined for surface imperfections. Next it was subjected to the double thermal and quenching test, examined for surface imperfections, and it was subjected to the Master Car Builders' standard drop test. Finally, after examination for surface imperfections, it was tested to destruction with a 1,640-pound drop. The thermal test for cast iron car wheels was employed, the rim of molten cast iron having been 1½ inches thick, which was removed from the tread of the wheel

immediately after setting, approximately 2½ to 3½ minutes after pouring was stopped. The double thermal and quenching test to which the wheels were subjected was the same as the foregoing, except that the rim of molten cast iron was 3 inches thick and was allowed to set from 3 to 3¾ minutes after pouring, the wheel then having been immersed in water from 1½ to 2¼ minutes after the removal of the cast iron rim and left in water from 4¾ to 6 minutes, or until cold.

The drop test consisted in supporting the wheel at three points under the back of the rim and striking the front projection of the hub 12 blows with a 200-pound tup falling 12 feet. The destruction test was made under an axle drop, the wheel lying on its back supported at three points under the back of the rim. On the front projection of the hub was placed a piece of steel, about 10 inches in diameter and 10 inches high, which weighed about 200 pounds. This was used to insure the hub projection being struck a fair blow by the hammer face of the falling tup, which weighed 1,640 pounds. The first blow was delivered from a height of 5 feet, the next 10 feet, the third 15 feet and the fourth 20 feet. During the thermal test the rims of molten cast iron cut the flange of the wheel where they struck during pouring. As no signs of other damage were visible, the examinations of the wheels after the thermal test were reported as satisfactory.

Committee Recommendations

As a result of these preliminary tests the committee was then able to offer final recommendations, but reported progress as follows:

Mating and grouping: A large number of wheels have been mated and grouped by carbon and have been put in service by different consumers. Until the results of these trials are obtained, the committee can make no recommendations.

Analyses: — The remarks under "Mating and Grouping" also apply here.

Thermal Test: — The effect of this test upon rolled steel wheels seems imperceptible. The committee does recommend its incorporation in this specification.

Drop Test: — Information thus far obtained does not seem to justify the recommendation of any test applied to groups or individual wheels.

All of the revisions in the existing, as well as the new specifications, were adopted without change and were referred to the Society for letter ballot. The changes recommended and some of the provisions of the new specifications precipitated considerable discussion and many efforts were made to have sections of these referred back to the committee for further consideration.

William R. Webster, chairman of committee A-1, vigorously opposed such action. He maintained that any objection to the report could be offered to the committee for future consideration with instructions to report at the next annual meeting. Other members of this committee voiced similar sentiments and as a result the entire report was adopted without change, for reference to letter ballot. It developed that members of certain sub-committees offered objections to changes in existing and to new specifications, who had every opportunity to present them to their respective committees, but failed to do so; in addition, in several instances, they failed to record a negative vote in the committee ballot. Attention also was directed to the delay that would be occasioned by referring specifications back to the various committees, as much needed changes could not be made until the next annual meeting of the society. The objections, in most instances, were of minor importance and in no way affected the value of the specifications. Unless drastic changes are required in specifications reported by a committee, it was the sense of the meeting that the committee report should stand without change. The consideration of this report was greatly expedited as a result of this method of procedure and both manufacturers and consumers will derive the benefits of revisions and new specifications during the ensuing year.

A representative of the American Electric Railways Engineering Association vigorously opposed the adoption of the standard specification for wrought solid carbon-steel wheels for electric railway service. He endeavored to delay the adoption of the report for one year until action should be taken by his society. He likewise asked for a change in specifications for splice bars so that they would not apply to splice bars for girder rails. In both instances, however, the members decided to adopt the specifications as reported.

Blooms, Billets and Slabs for Forgings

Forging manufacturers manifested considerable interest in the new specifications for blooms, billets and slabs for carbon-steel forgings, which were adopted. Several users of these large forms of steel objected to the specifications, as they believed that they do not sufficiently safeguard the interests of the consumer. A request was made for the incorporation of a tensile test as well as a clause covering segregation. In discussing the latter feature, Robert Job stated that the largest number of failures in forgings can be traced to such defects as porosity and piping, which cannot be detected in a billet or bloom received by the manufacturer in apparently good condition. Another forging manufacturer called attention to the need of drastic specifications owing to the prospective importation of blooms and billets by companies located on the Atlantic coast. The chairman of the sub-committee which formulated these specifications reported that it was impossible at this time to prepare a clause covering segregation owing to the different ideas entertained regarding its provisions by the various forging manufacturers. Photographs of blooms were displayed which showed large segregated areas in their interior, but which could not be detected by an examination of the ends of the blooms. However, the specifications for blooms, billets, etc., for forgings were adopted without change and will be referred to letter ballot, although the sub-committee will endeavor to formulate a segregation clause and a tensile test to be reported at the next annual meeting. The relation of yield point to ultimate strength is to be investigated by committee A-1, with instructions to report next year.

Wrought Iron Plates

James P. Roe, of the Glasgow Iron Co., Pottstown, Pa., in presenting the proposed standard specifications for wrought iron plates, briefly discussed iron plate manufacture and directed attention to the position it occupies among the industries of today. Although the output is comparatively small, the requirements of the trade are exacting and the specifications for this product which were adopted and referred to letter ballot are the first promulgated by a technical society in this country. The report of the committee on standard specifications for wrought iron was presented by S. V. Hunnings, chairman. It recommended slight changes in the specifications for engine bolt iron and refined wrought iron bars, which were adopted and referred to letter ballot. The sub-committee on staybolt iron decided that it was advisable not to consider any change in the tensile and elongation requirements of the specification until the laboratory requirements had been agreed upon and the influence of the tensile strength and elongation upon such results had been carefully considered. An exhaustive series of tension and laboratory tests has been outlined, which will be reported at the next annual meeting. At the request of one of the leading railroads, a sub-committee has been appointed to formulate specifications for chain iron and for iron chain.

Tentative specifications for cold-drawn steel, including both Bessemer

and automatic screw stock, were submitted by committee A-8. They were offered merely as trial specifications and from the data that will be obtained during the ensuing year as a result of their application, necessary changes will be made and the final specifications will be submitted to the society for action next year. The material covered by these specifications is intended primarily for use in automatic screw machines where high cutting speeds are desirable, and since it shows a relatively low ductility on physical test, it is not suited for service where a ductile material is required. J. A. Capp, of the General Electric Co., who presented these specifications in the absence of C. E. Skinner, chairman of the committee, explained that the inspection and rejection clauses differ from those recommended by committee A-1 as the machineability of the product is involved and the necessary information covering this feature must be obtained largely at the works of the consumer.

Bessemer Screw Stock

In discussing Bessemer screw stock for automobile machines, C. D. Young of the Pennsylvania railroad, Altoona, Pa., said that this material is unusually well adapted for receiving threads and permits of a high machine output, but when subjected to shock in service it cracks owing to the comparatively high phosphorus content. Open-hearth screw stock, on the contrary, is not as desirable material from the viewpoint of thread cutting and machine output, nevertheless it gives excellent results in service, particularly when subjected to shock.

Almost from the time of the organization of the American Society for Testing Materials, William R. Webster, consulting engineer, Philadelphia, has occupied the position of chairman of Committee A-1 on standard specifications for steel. The committee originally had a membership of six and at the time of its organization, the total enrollment of the society was 73. As constituted at present, the work of the committee is divided among 16 sub-committees and the total committee membership is 93. For several years, Chairman Webster has considered retiring and at a meeting of Committee A-1, held last week, he tendered his resignation. C. D. Young, engineer of tests of the Pennsylvania railroad, Altoona, Pa., second vice chairman of the committee, was elected chairman to succeed Mr. Webster. A. A. Stevenson, of the Standard Steel Works, Philadelphia, first vice chairman, and Edgar Marburg, secretary of the committee, also resigned. These vacancies were filled as follows: John A. Capp, chief of the testing laboratory of the General Electric Co., Schenectady, N. Y., first vice chairman; G. Aertsen, of the Midvale Steel Co., Philadelphia, second vice chairman, and C. L. Warwick, of the University of Pennsylvania, Philadelphia, secretary. The retiring officers of this committee were tendered a vote of thanks for their years of arduous labor and their work was eulogized by several of the members.

Concrete Bars From Rerolled Rails

The Standard Specifications presented for Rail Steel Concrete Reinforcement Bars were based on an investigation of this material and its process of manufacture conducted during the year by Prof. William K. Hatt, of Purdue University.

Tests were made on 2,036 samples of reinforced bars rerolled from steel rails and these samples were subjected to 719 tension and 1,264 bend tests. This investigation received the support and co-operation of the Rail Steel Bar Manufacturers' Association, represented by E. E. Hughes, president, and A. S. Hook, secretary, and also the following rail steel re-rolling mills: The Laclede Steel Co., St. Louis; Buffalo Steel Co., Tonawanda, N. Y.; Franklin Steel Co., Franklin, Pa.; Inland Steel Co., Chicago Heights, Ill.; Calumet Steel Co., Chicago Heights, Ill., and the Interstate Steel Co., Cambridge, O. The report submitted covered reinforcing bars rerolled from steel rails without reference to other reinforcing bars rolled from billet steel or miscellaneous material.

The process of rerolling rails for reinforcing bars was briefly described as follows: The material used consists mainly of old rails which have been removed from service, although new rails, known as seconds, are used to some extent. The latter are rails which have been rejected on account of some surface physical defects. Before the rails are heated, defects which might interfere with rolling, such as split heads, burrs or cracks, are carefully removed. The rails are broken into lengths of 10 to 15 feet before heating, although one mill is equipped to roll rails their full length, 33 feet. To roll bars of large cross-section and of considerable length requires a rail with a large head and which is but slightly worn. When it is desired to roll a small bar from the web, a shorter rail must be used, as otherwise the resulting bar would not only be inconvenient to handle, but would be too long for the hot beds. The furnaces are equipped to hold from 45 to 65 rails and the rate of progress of the rail through the furnace is dependent upon the speed of rolling. The average rate of rolling ordinary bars is from ¾ to 1¾ minutes each. Assuming a capacity of furnace of 60 rails, the time required for heating would be from 45 to 75 minutes. The rolling is similar to that on any bar or small shape mill, except that the head, web and flange must be rolled separately. Consequently, the first, or first two passes must strip these elements from each other. The different parts are rolled into the desired sizes and shapes, as in an ordinary mill. The portion of the bar representing the part of the web containing the bolt holes is sheared off during the process of rolling, or after the bar is rolled. The changes in tensile strength and elongation consequent upon the reduction of the rail in the rolls were determined by this investigation.

Reinforced Steel

Although reinforcing steel is rolled from all three parts of the rail, most of it comes from the head. The web and flange furnish the small shapes, such as flats, channels, angles and tees, which are supplied extensively to the furniture and agricultural implement industry. One rerolling mill is manufacturing built-up electric transmission line poles from U-bars and flats of rerolled rail steel.

The bars were tested in the manufactured form without surfacing. The tension test was made under the usual conditions with observations of the yield point, ultimate strength, elongation and reduction and sections of the bar also were subjected to cold bending tests.

The tensile tests showed that rerolled steel has an excess ductility for its strength above usual grades of steel and that the twisted bars yield, as a rule, a smaller product of strength and elongation than the plain or deformed.

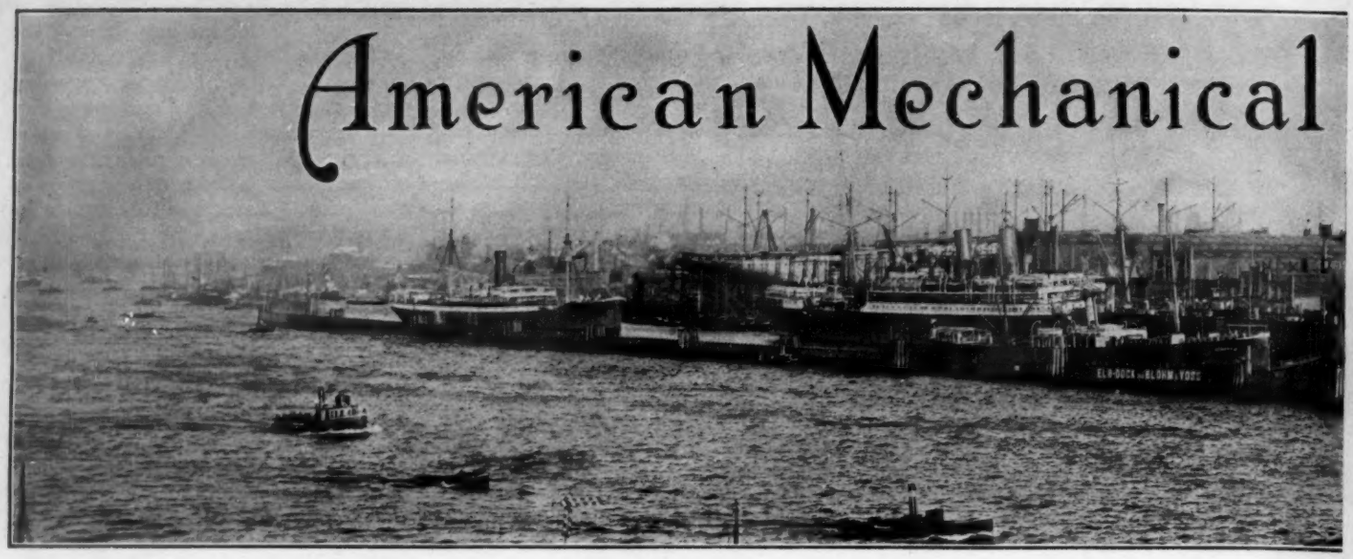
The average mechanical properties of the rerolled rail bars tested, follow:

Deformed and plain bars—Tensile strength, 98,600 to 108,500 pounds per square inch; yield point, 60,000 to 75,000 pounds per square inch, and elongation in 8 inches, 15.2 to 20.1 per cent.

Hot twisted bar—Tensile strength, 90,000 to 102,000 pounds per square inch; yield point, 55,000 to 65,000 pounds per square inch, and elongation in 8 inches, 14 to 21.1 per cent.

(*Continued on page 34.*)

American Mechanical



A View of the Magnificent Harbor at Hamburg Germany, Where the Members

Plants Visited and General

Dresden, June 25.—With the arrival of the delegates of the American Society of Mechanical Engineers at Hamburg on June 19, a tour of inspection of many of the leading German industries was begun which will reveal to the visitors the tremendous industrial activity of the German Empire. While many of the party previously had inspected portions of the district visited, even they were much impressed with the growth of the works with which they were more or less familiar.

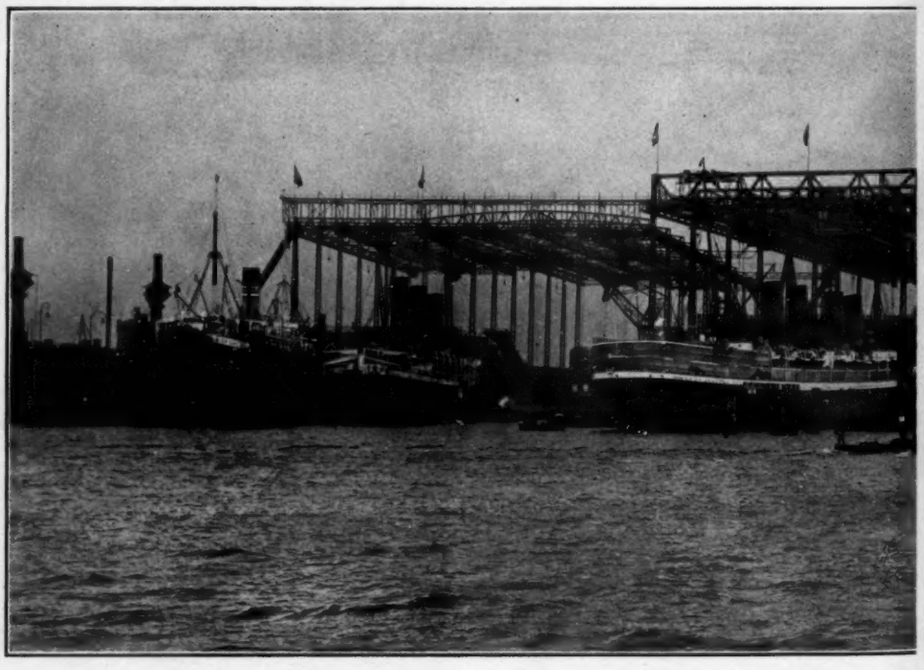
On June 20, the afternoon was devoted to an inspection of the Frei Hafen (Free Harbor) of Hamburg, followed by a reception in the municipal hall by the senate of the city and by the Hamburg section of the Verein Deutcher Ingenieure, the trip through Germany being under the auspices of the latter organization.

As its name implies, the Free Harbor is a port into which the manufacturers of the world may bring their wares duty free and there display them, store them and negotiate their sale in buildings which have been designed and erected with special reference to the conveniences necessary for the carrying on of such work. These splendid buildings provide suitable offices and store rooms which may be rented at reasonable rates. When goods are sold and enter Germany, the duty applicable is collected, but not before. This greatly facilitates buisness transactions.

On June 21 the party was divided into two groups, one having visited the ship yards of Blohm & Voss and the other the Vulcan yards, both parties having been given an opportunity to inspect the Elbe tunnel.

The Vulcan yards were founded in 1856, and were located at Bredow near Stettin, their official title being the Stettiner Maschinenbau Actien-Gesellschaft Vulcan. In 1906 the Hamburg plant was installed to take care of the constantly increasing business and covers an area of about 50 acres.

The Free State of Hamburg welcomed the Stettin company to its locality, recognizing the fact that such an important shipbuilding establishment on the Elbe would undoubtedly prove beneficial to the port. The site is situated within 15 minutes' trip on a steam launch or 10 minutes on an electric tramway from the center of the town, and the company maintains a launch for visitors. A deep waterway from the yard to the North Sea, which is 60 miles away, is sufficient to float the largest ships ever likely to be built, and this fact alone establishes the suitability of the site. There is a normal rise and fall of the tide of about 6 feet 6 inches, and the climatic conditions are about the same



The Ship Yard of Blohm & Voss,

Engineers in Germany

OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS ARRIVED ON JUNE 19

Entertainment Features

Special Staff Correspondence

as those experienced in other parts of North Germany, the range of temperature being from 10 to 75 degrees Fahr.

The building berths provide for the construction of ships up to 1,000 feet in length, and the arrangement of the various shops has been planned with a view to supplying material to ships under construction with the greatest possible convenience and a minimum of handling. The turbine shops, engineering works, boiler shops and auxiliary departments are all arranged along the eastern boundary, and near to the wharf where the ships are moored while being fitted out.

A floating shear legs is an interesting feature and is capable of lifting 100 tons, while numerous other cranes are mounted upon the wharf for handling material at various points. There are splendid arrangements for the supply of raw material to the works, the railway track leading direct to both stores and to the various shops. The storage yards are served with grantry cranes of varying capacities.

The general stores consist of a three-story building on three sides of a square, the space between the side buildings being covered by a glazed roof. In this covered area there are three 3-ton cranes running on an overhead gantry, and under these are racks built-up of channel bars bolted together with vertical doors sliding in the grooves of the channels. These are fitted with shelves for the storage of rods, screws, pipes and lighter material. The basement is used for oil storage, which is distributed by means of air pressure, the air-pump being electrically operated.

HAMBURG, GERMANY, VISITED ON JUNE 21

The shipbuilding department consists of six parallel bays about 215 feet long and 50 feet wide, having a transverse bay at the northern end, about 75 feet wide. One of the heavy plate rolls in the plate shop provides for handling plates 36 inches in length and about 1¼ inches in thickness. Another machine is for flanging keel plates and works under a pressure of 1,700 pounds per square inch. It is used for turning up the edges of keel plates for a length of 33 feet, but as the ends of this machine are open, longer plates may be dealt with. There are numerous other heavy punches and drills all designed for the most severe work, such as would naturally be encountered in a ship-building establishment. The various bays are provided with an excellent assortment of machine tools and the area is served by overhead electric cranes of varying capacity.

A galvanizing shop is provided having an area of about 1,800 square feet, the hot process of galvanizing being em-

ployed. Two electric traveling cranes are used for handling the material in the baths, of which there are two. One of these is about 30 feet long by 2 feet 6 inches wide and 5 feet 8 inches deep, while the other is about 7 feet long, 18 inches wide and 2 feet 6 inches in depth.

The blacksmith shop is approximately 200 x 100 feet, splendidly lighted and well-equipped. The woodworking department is splendidly arranged and comprises a mill having 7,000 square feet of floor space; timber sheds, 5,383 square feet, and an engine house containing 2,562 square feet. The carpenters' and joiners' department has approximately 15,000 square feet.

Other Products

As is usual with Continental manufacturing enterprises, the yards are not restricted to the building of ships, but also embrace in their products both marine and stationary steam engines and turbines, the latter being of the Curtis—A. E. G.—Vulcan type, boilers of all kinds, locomotives of all types, condensing plants, centrifugal pumps, steam pumps, hydraulic turbines, blowing plants, power meters and the ingenious Fottinger power transmitter for use in connection with turbine-driven vessels. The device transmits the power of the turbine to the ship's propeller at a reduced speed and also provides means for reversing the direction of the latter or completely stopping without shutting down the turbine.

On Sunday, June 22, the party left Hamburg for Leipzig, arriving there at 4:30 p. m., and a reception was held at 8 p. m. in the Crystal Palace.

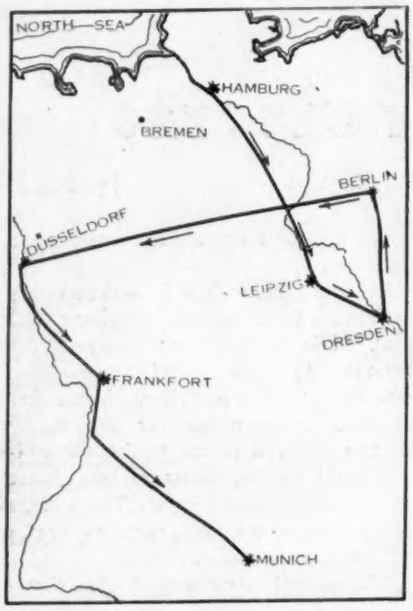
On Monday, June 23, the formal meeting of the Verein deutscher Ingenieure was held in the municipal hall. In the afternoon a concert was given in the Gewandhaus under the direction of Arthur Nikish, and in the evening the formal dinner was held in the Central theater.

Tuesday, June 24, was devoted to scientific lectures in the lecture room of the Architectural Exhibition, an inspection of the monument of the Battle of Nations, which has been erected in commemoration of the 100th anniversary of the Battle of Leipzig in 1813, and an evening festival in the Palm Garden.

Engineers at Dresden

On the morning of June 25, the party left for Dresden arriving there at 11 a. m. The afternoon was devoted to an automobile trip to the Saxon Switzerland, a walk to Rathen and thence by steamer to Pirna and from Pirna by automobile to Dresden. The trip is one long to be remembered, as it embraces a bit of the loveliest scenery in Saxony. In the evening the party was entertained in the municipal building tendered by the city of Dresden.

The program for Thursday, June 26, embraced an excursion through Dresden, the party dividing into three groups, one going to the machine laboratory of the Technical high school, one to the factory of Seidel & Naumann, devoted to the manufacture of sewing machines and bicycles and the third to the famous art gallery of Dresden. In the afternoon, after luncheon at the Neustadt railway terminal, the party departed for Berlin, arriving there at five o'clock. At eight in the evening a reception was held in the Reichstag building, one of the most beautiful legislative structures in all Europe.



SKETCH OF THE ITINERARY OF THE GERMAN EXCURSION OF THE A. S. M. E.

Electrically-Operated Canadian Rolling Mill

(*Continued from page 26*)

In passing through the reel pipes, the rods are sprayed with water to hasten their cooling and after being discharged from the reels they are delivered to a conveyor operating in a concrete pit, approximately 150 feet long and 40 inches wide. The conveyor is enclosed in cast iron plates, the tops of which are covered with sand to a depth of several inches and as the speed of the conveyor is slow, the rods are partially annealed before being discharged onto trucks for loading into cars. In Fig. 1 this conveyor is shown extending diagonally across the mill from the four rod reels and the discharge end of the conveyor is illustrated in Fig. 19. This view shows cast iron plates filled with sand on top of the conveyor. The treatment to which the rods are subjected has the effect of reducing to the minimum the formation of scale, thereby eliminating a large amount of cleaning necessary before they are drawn into wire. The partial annealing also has a beneficial effect on the steel. This is the first installation of this type made in America, although one of these conveyor systems has been installed in an European rod mill. Approximately 10 minutes elapse from the time the bundles are discharged from the reels until they reach the end of the conveyor. The four rod reels are illustrated in Fig. 17. In the continuous rod mills previously installed, the steel passes through the various stands of rolls in a straight line without being looped.

Rolling Merchant Bars

When rolling merchant bars, 30-foot billets, 2 or 2½ inches in section, are used. Depending upon the size and weight of the bars being rolled, certain of the roughing and finishing stands are cut out. Between the roller table of the heating furnace and the 12-inch continuous roughing train, is a feed roller and dividing shear and between the roughing train and the 10-inch finishing train is an Edwards intermediate, flying, swing-knife shear. Merchant bars, after passing through the last finishing stand, are run out onto a single escapement type cooling bed, 250 feet long, shown in Figs. 1 and 15. At the end of the cooling bed is a bar shear driven by a 10-horsepower, alternating current motor. The cooling bed is operated by two 50-horsepower, direct current motors, one variable-speed, 40-horsepower and one 30-horsepower, alternating current motor. The back shear table is equipped with an electrically-operated kick-off, driven by a 10-horsepower motor. After being bundled, the bars are loaded onto cars on a track entering one side of the plant, by an overhead electric traveling crane.

Purchased Power

As previously stated, all of the mills are electrically-driven, the power being purchased from a 42,000-horsepower hydro-electric plant operated by the Dominion Power & Transmission Co., near St. Catherines, Ont. The current is transmitted a distance of approximately 40 miles. The cost of the current is exceedingly low, namely ½ cent per horsepower-hour, which is a figure difficult to approach even in a plant generating its power by engines driven with blast furnace gas. Inasmuch as the plant has only recently been placed in operation, the power consumption per 24 hours cannot be accurately stated, but when these figures are available, they will

prove exceedingly interesting and valuable for purposes of comparison.

The current is received at 44,000 volts, 66-2/3 cycle, and is stepped-down to 2,200 volts, three phase, for all of the large motors and to 220 volts, two-phase, for the small motors and for lighting purposes. All of the current passes through three 2,000-kilowatt transformers and that required for the small motors is stepped-down to 220 volts through two 250-kilowatt transformers. The transformer station is shown in Fig. 12.

The twin armature reversing blooming mill motor, Fig. 7, is rated at 3,000 horsepower, but is designed to carry a momentary peak load of 8,000 horsepower. It is driven by a motor-generator set consisting of one 1,800-horsepower alternating current, 2,200-volt, three-phase motor mounted on a common shaft with a 50-ton flywheel and two 1,200-kilowatt generators. This motor-generator-flywheel set is illustrated in the general view of the main power station, Fig. 11. Under light loads the flywheel has a speed of 500 revolutions per minute, but even under the heaviest loads the speed of the flywheel is not reduced below 450 revolutions per minute. The motor is designed to effect 15 complete reversals per minute or one reversal from no load to full speed in four seconds.

Number of Passes Through Rolls

When breaking-down ingots into blooms for the billet mill, the steel is given 18 passes through the rolls, but when breaking-down for 6 x 6-inch blooms, the number of passes is reduced to 15. It is apparent, therefore, that the loads on the motor-generator set will vary rapidly over a wide range, the rate of change at times aggregating 4,000 to 5,000-horsepower per second during acceleration and approximately the same when braking. A load of this kind, from the standpoint of power supply, would be exceedingly undesirable, and the cost of the current necessarily would be excessive. To equalize these fluctuations, the flywheel was installed to deliver energy during the periods of heavy load and to store energy during periods of light load. In order that the flywheel may give up some of the energy stored in it, the speed must be reduced and to store energy the speed must be increased.

To enable the flywheel to assist the 1,800-horsepower, three-phase motor to drive the two 1,200-kilowatt generators, all mounted on one common shaft, an automatic slip regulator has been installed, which introduces resistance in the rotor when the current reaches a certain value, the speed thereby being reduced and a portion of the energy stored in the flywheel is utilized for driving the two generators. Reducing the load on the generators automatically cuts out the resistance and as the speed increases, energy again is stored in the flywheel.

Control of Rotation and Speed

The direction of rotation and the speed of the reversing motor are controlled by changing the polarity of the generators and varying their field considerably, thereby varying the voltage applied to the armatures of the mill motor. This eliminates rheostatic losses except in the field circuit and permits any desired speed to be obtained independent of the load. As a result of this arrangement, no peak loads are taken off the line and the current input to the motor-generator set is maintained practically constant.

The blooming mill motor complete weighs 429,000 pounds and the rotating part, which operates at a minimum speed of 100 revolutions per minute, weighs 164,000 pounds. Ventilation is provided by a Sirocco fan installed by the American Blower Co., Detroit, which has a capacity of 24,000 cubic feet of free air per minute. This fan is operated by a 40-horsepower, alternating current motor. The motor-generator-flywheel set weighs 367,130 pounds and the rotating part weighs 240,000 pounds. The reversing blooming mill motor is provided with a thrust bearing on its shaft and a braking coupling is installed between the bearing and the pinion housing.

In the power station, shown in Fig. 11, a 1,000-horsepower motor-generator set also is installed, which consists of one 500-kilowatt generator for supplying direct current for the small motors throughout the mill and a 175-kilowatt generator for furnishing current for excitation for all large motors and generators.

The motor driving the continuous billet mill, Fig. 10, is of the alternating current, constant-speed type and has a capacity of 1,600-horsepower. It is driven by three-phase current at 2,200 volts and operates at a speed of 270 revolutions per minute. It is connected to the main mill drive through a braking coupling by a herringbone gear, which operates bevel gears for driving the four stands of rolls.

Horsepower Required for Billett Mill

In Fig. 21 is shown a theoretical power diagram for the continuous billet mill. It will be noted that the average horsepower required is 1,600 and to carry the peak load, 2,000. The friction load is indicated by the bottom straight line and the passage of the steel through the four stands of rolls is shown by the stepped lines at the left, which gradually increase to 1,600 horsepower and as the steel leaves each successive stand, the horsepower is reduced, as shown by the stepped lines at the right. It will be noted that the speed of the finishing rolls is 260 feet per minute and that the average cycle is 4.2 minutes based on an output of 25 gross tons per hour.

The combination continuous rod and merchant mill is driven by two 1,600-horsepower, direct current, variable-speed motors receiving current at 600 volts. One motor operates the six roughing stands and four of the finishing stands, and the other, the remaining seven finishing stands. These motors derive their power from a motor-generator set, Fig. 8, which consists of a 3,200-horsepower synchronous motor on a common shaft with two 1,200-kilowatt generators. The roughing train motor is connected by a braking coupling, while the finishing train is belt-driven through a nest of gears and pinions. The motor speed can vary from 250 to 420 revolutions per minute. The combination rod and merchant bar mill motors are illustrated in Fig. 9, the one at the left operating the roughing and four stands of the finishing train and the one at the right, seven stands of the finishing train. A view of the bevel gear drive for the six stands of roughing rolls and four finishing stands, is illustrated in Fig. 13. The guards for these gears have been removed. Artificial illumination is provided by 250-watt lamps, two in series, which are spaced at distances of 25 feet and approximately 33 feet from the floor level.

Gas Producers

For supplying fuel to the soaking pits, four Morgan, 10-foot gas producers have been installed in a building 60 x 24 feet, the coal being discharged from the cars into a crusher and is elevated by a belt conveyor into storage bins having a capacity of approximately 200 tons. From the storage bins the coal is discharged through hoppers into the gas producers. For supplying fuel to the continuous billet heating furnace, three Morgan gas producers have been provided, which are located at one side of the merchant mill building. The blooming, billet and finishing mills are commanded by electric traveling cranes and a 40-ton crane has been installed in the blooming mill power station. The plant was designed and built by the Morgan Construction Co., Worcester, Mass.

The Steel Company of Canada, Ltd., is a consolidation of the Hamilton Steel & Iron Co., the Canada Bolt & Nut Co., the Canada Screw Co., the Dominion Wire Mfg. Co. and the Montreal Rolling Mill Co.

Many Iron and Steel Specifications Revised

(*Continued from page 29*)

Of the plain and deformed bars under ¾ inch in section, 95 per cent bent to 180 degrees and the minimum single bend was 55 degrees. Of the bars ¾ inch and over, 97.6 per cent bent to 90 degrees and the minimum single bend was 40 degrees. Of the twisted bars under ¾ inch in section, 96.5 per cent bent to 180 degrees and the minimum single bend was 75 degrees; twisted bars, ¾ inch and over, 93.2 per cent bent to 180 degrees and the minimum single bend was 20 degrees.

The samples were collected to represent the output under commercial mill conditions and no attempt was made to impose artificial conditions necessary to determine the effect due to the continued variations of each of the several factors, except in the series of new rails. These factors include design of bar, size, original position in rail, kind of rail, mill practice, roll temperature and rate of cooling.

Plain and Twisted Bars Compared

Physical tests showed that the plain round bars are the strongest and the twisted bars weakest. Samples rolled from flanges gave the following results:

Plain round bars.—Tensile strength, 99,800 pounds per square inch, and elongation, 1.82 per cent.

Deformed round bars:—Tensile strength, 101,400 pounds per square inch, and elongation, 16.3 per cent.

Deformed square bars:—Tensile strength, 95,600 pounds per square inch, and elongation 17.3 per cent.

Square twisted bars:—Tensile strength, 90,000 pounds per square inch, and elongation 18.8 per cent.

To ascertain the relation between rerolled bars and the original rail and the changes in mechanical properties at the successive passes, new rails, but mill seconds, were used. The material in the head of a new 75-pound rail had a tensile strength of 97,150 pounds per square inch, whereas the tensile strength of the rerolled rail was 93,480 pounds. The elongation of the original rail was 14.80 per cent and of the rerolled rail, 20.16 per cent. The tensile strength of the material in the flange of the original rail was 99,000 pounds per square inch and that of the rerolled, 96,580. The elongation of the original rail was 16.70 per cent and of the rerolled rail, 19.20 per cent. The steel in the head of a new 60-pound rail had a tensile strength of 94,130 pounds per square inch and that of the rerolled rail, 94,940 pounds. The elongation of the original rail was 17.2 per cent and of the rerolled rail, 20.6 per cent. This indicates that the process of rerolling has raised the mechanical quality of this material and has brought nearer together the divergent material from the head and the flange.

Variability of Product

On the subject of variability of product, the report stated that a reinforced concrete unit, such as a beam, slab or column, employs a number of bars and in a band of bars in a flat slab there may be as many as 20 bars of small size below ¾ inch. As the nature of concrete is to spread loads, and averaging up physical conditions, it would appear that a greater variability of product is admissable than in other steel structures where a structural unit comprehends a few bars. It was stated that the difficulty of rerolling good material will increase with the size of bar for the reason that there will not be enough reduction from the head of the rail to the finished bar and any flow or segregation in the head of the original rail are not so lightly to be effaced in the rolls. However, it is difficult to find rails of sufficiently large head to roll such large bars as 1⅛ and 1¼ inches and the proportion of the product rolled in these sizes is small.

Application of Specifications

The present specifications of the American Society for Testing Materials for reinforcing bars of hard grade were applied to the bars tested in this investigation, the hot-twisted bars having been classed as deformed bars. Of the twisted bars, 1 inch and less in section, 84 per cent were passed as suitable material complying with the requirements of the specifications, and of twisted bars, ¾ inch and less, 92 per cent were passed; the average of all tests of twisted bars passed was 83.4 per cent. Of all other bars, 1 inch and less in section, 95.7 per cent were passed, and ¾ inch and less, 97 per cent were passed; the average of these bars passed under the specifications was 95.1 per cent.

The proposed new standard specifications for rail steel concrete reinforcement bars were referred without change to the society for letter ballot.

Rail Failures

The presentation of the paper entitled "Rail Failures and Their Causes," by M. H. Wickhorst, published in THE IRON TRADE REVIEW June 26, provoked considerable discussion. P. E. Carhart, of the Carnegie Steel Co., suggested that since the author has tabulated the causes of rail failures according to the different types of fractures and defects in the steel, it might be advisable to make another tabulation showing the failures due to severe climatic conditions, failures on trunk lines where the traffic is particularly heavy, etc.

H. D. Hibbard, of Plainfield, N. J., stated that surface seams invariably can be traced to blow-holes near the surface of the steel from which the rails are rolled. These blow-holes are filled with oxide of iron and when they are extended by rolling they ultimately result in longitudinal cracks.

N. Petinot, of the Titanium Alloy Mfg. Co., Niagara Falls, N. Y., presented analyses of rail steel untreated and treated with titanium which showed the uniform distribution of the metalloids in the different sections of the treated rail as compared with the segregated condition of the metalloids in the untreated rail. The analysis of the untreated rail follows:

	Top of head, per cent.	Center of head, per cent.	Flange, per cent.
Carbon	0.64	0.75	0.73
Phosphorus	0.019	0.026	0.02
Sulphur	0.032	0.05	0.038
Manganese	0.784	0.901	0.790

The analysis of the rail steel treated with titanium follows:

	Top of head, per cent.	Center of head, per cent.	Flange, per cent.
Carbon	0.76	0.77	0.77
Phosphorus	0.019	0.018	0.018
Sulphur	0.034	0.035	0.035
Manganese	0.744	0.810	0.757

George L. Norris, of the American Vanadium Co., Pittsburgh, discussed a series of tests to ascertain the resistance of steels to wear in relation to their hardness and tensile properties. This paper will be published in an early issue of THE IRON TRADE REVIEW.

William R. Fleming, of the Andrews Steel Co., Newport, Ky., presented an exceedingly interesting paper on "Oxygen in Iron and Steel," in which he discussed the Ledebur method for its determination. He also stated that there is no evidence that oxygen is an accelerator of corrosion, but on the contrary, there is an abundance of testimony pointing in the opposite direction. "We know that wrought iron resists corrosion much better than steel," the author added, "and we know that most wrought iron is polluted with oxygen. While I do not defend wrought iron and believe that metal can be made in the open-hearth furnace which will be even more rust-resisting than wrought iron, at the same time I believe we are unfair when we compare percentages of oxygen in the two metals and use

the high percentage in wrought iron to lead prospective buyers away from it. It is my opinion that if the truth were known, oxygen retards rather than accelerates corrosion."

No denial of the theories advanced by Mr. Fleming was offered by manufacturers of open-hearth iron, although Allerton S. Cushman discussed the Ledebur method of oxygen determination and admitted the difficulties involved in obtaining accurate results owing to the exceedingly minute amounts of oxygen dealt with. The success of this method, he explained, to a large extent is dependent upon the manner of obtaining the sample. A minute trace of superficial rust and the slightest trace of blueing in the sample as a result of burning in the lathe when obtaining the sample will lead to inaccurate determination. For these reasons Mr. Cushman does not believe that the Ledebur method is adapted to ordinary commercial laboratory practice, but he recommended it for use in a plant laboratory where the necessary precautions can be taken. In concluding his discussion, Mr. Cushman called attention to the lack of information concerning the oxidation of metal. "What do we know about the oxidation of metal in the bath?" he asked. He questioned whether the metal is not thoroughly deoxidized in the furnace before pouring, but becomes oxidized when tapped into the ladle and again when teemed into the ingot molds. He submitted these questions to metallurgists for deep study and careful consideration.

Boiler Tube Tests

Preliminary results of tests on welded boiler tubes made by the Bureau of Standards for the Division of Locomotive Boiler Inspection of the Interstate Commerce Commission were reported by E. L. Lasier. In the last year 63 accidents, resulting in one death and 70 injuries, have resulted from the failure of locomotive boiler tubes, and it is largely because of this fact that this investigation was undertaken.

Mechanical tests of heat-treated spring steel were reported by R. P. Devries, and "A Magnetic Criterion of the Mechanical Properties of a 1 Per Cent Carbon Steel" was the subject of a paper presented by Charles W. Burrows. A paper by Albert F. Shore entitled "Notes on the Property of Toughness in Metals" was read by title.

Practically one entire session was devoted to the consideration of a committee report and papers on the heat-treatment of iron and steel. The influence of moss on the heat-treatment of steel provoked considerable discussion, although it was apparent that considerable research work remains to be done along this line to ascertain definitely the results of heat-treating steel objects of varying sections.

The following recommended practice for the heat-treatment of case-hardened carbon steel objects, reported by committee A-4, was referred to letter ballot for adoption:

1.—When hardness of case only is desired and lack of toughness or even brittleness unimportant, the carburized articles may be quenched from the carburizing temperature, as for instance, by emptying the contents of the boxes in cold water or in oil. Both the core and the case are then coarsely crystalline.

2.—In order to reduce the hardening stresses and to decrease the danger of distortion and cracking in the quenching bath, the articles may be removed from the box and allowed to cool before quenching to a temperature slightly exceeding the critical range of the case, namely, 800 to 825 degrees Cent. Both the core and case remain coarsely crystalline.

3.—To refine the case and increase its toughness the carburized articles should be allowed to cool slowly in the carburizing box within the furnace or outside to 650 degrees Cent., or below, and should then be reheated to a temperature slightly exceeding the lower critical point of the case (in the majority of instances a temperature varying in accordance with the carbon content and thickness of the case between 775 and 825 degrees Cent. will be suitable), and quenched in water, or, for greater toughness but less hardness, in oil. The objects should be removed from the quenching bath before their temperature has fallen below 100 degrees Cent. This treatment is more especially to be recommended when the carburizing temperature has not exceeded 900 degrees Cent. It refines the case but not the core.

4.—To refine both the core and the case and to increase their toughness the articles should be allowed to cool slowly from the carburizing temperature to 650 degrees Cent., or below, and should then be (a) reheated to a temperature exceeding the critical point of the core which will generally be some 900 to 950 degrees Cent., followed by quenching in water or in oil; and (b) before they have cooled below 100 degrees Cent.[1] they should be reheated to a temperature slightly exceeding the lower critical point of the case (in the majority of instances a temperature varying in accordance with the carbon content and thickness of the case between 775 and 825 degrees Cent. will be suitable), and again quenched in water or oil.

5.—In order to reduce the hardening stresses created by quenching, the objects, as a final treatment, may be tempered by reheating them to a temperature not exceeding 200 degrees Cent.

Physical Properties Developed by Heat-Treatment

J. H. Nead, in a paper entitled "The Effect of Size of Section on Physical Properties Developed by Heat-Treatment", directed attention to the tables of physical properties of commercial alloy steels obtained gratuitously from the makers of these materials, which give the results of tests of specimens approximately ½ inch in diameter. They are obtained from testing standard tension test pieces that have been heat-treated either in the test piece size or as ⅞ or 1-inch round bars, subsequently machined to standard tension test piece size. In no cases are these figures representative of the physical property values that are obtained commercially in treating different size sections of these materials. The figures represent the physical properties of hardened small sections, whereas the majority of commercial applications of these materials are for parts of large section, such as gear wheels, driving and crank shafts, axles, etc. The author stated that it is generally recognized that the strength, ductility, etc., which heat-treatment will develop in large sections, are quite different from the properties obtained in smaller sections by similar heat-treatment methods.

To ascertain the effect of size on the physical properties developed by heat-treatment, full-size rounds from ½ to 1¾ inches in diameter were tested. Tests were made on a 0.20 per cent carbon, 3.5 per cent nickel steel and a 0.40 per cent carbon, chrome-vanadium steel. The nickel steel series were heated to 1,550 degrees Fahr. and quenched in oil, while the chrome-vanadium bars were heated to 1,650 degrees Fahr., quenched in oil and drawn for 60 minutes at 500 degrees Fahr. After the heat-treatment, the pieces were finish-ground to size and tested. The chrome-vanadium steel series showed a decline in maximum strength of about 85,000 pounds per square inch, from the ½ to the 1¾-inch test pieces. This is a decrease of from 260,000 to 174,000 pounds per square inch, or about 33 per cent. The falling off in the elastic limit from the smallest to the largest sizes was even more remarkable, namely from 219,000 to 126,000 pounds per square inch, or 42.5 per cent. The reduction of area increased slightly from the smaller to the larger sizes, having been about 28 per cent for the former and 35 per cent for the latter. The percentage of elongation in 4 inches increased from 4 per cent for the smaller

[1]The objects should be removed from the quenching bath before they have cooled below 100 degrees Cent., in order to lessen the danger of cracking, and they should be placed in the reheating furnace while still at a temperature of at least 100 degrees Cent., likewise to lessen the danger of cracking, it being advisable (a) to allow steel to cool completely in the quenching bath and (b) to place hardened steel in a hot furnace. Obviously, if the furnace is cold the hardened steel may likewise be cold when placed in it for reheating.

Standard Specifications for Rail-Steel Concrete Reinforcement Bars

1.—These specifications cover three classes of rail-steel concrete reinforcement bars, namely, plain, deformed, and hot twisted.

I.—Manufacture

2.—The bars shall be rolled from standard section Tee rails.

3.—Hot-twisted bars shall have one complete twist in a length not over 12 times the thickness of the bar.

II.—Physical Properties and Tests

4.—(a) The bars shall conform to the following minimum requirements as to tensile properties:

Properties considered.	Plain bars.	Deformed and hot-twisted bars.
Tensile strength, pounds per square inch..	80,000	80,000
Yield point, pounds per square inch.....	50,000	50,000
	1,200,000	1,000,000
Elongation in 8 inch, per cent[1].....	Tens. str.	Tens. str.

(b) The yield point shall be determined by the drop of the beam of the testing machine.

5.—(a) For bars over ¾-inch in thickness or diameter, a deduction of 1 from the percentages of elongation specified in Section 4 (a) shall be made for each increase of ⅛ inch in thickness or diameter above ¾ inch.

(b) For bars under 7-16 inch in thickness or diameter, a deduction of 1 from the percentages of elongation specified in Section 4 (a) shall be made for each decrease of 1-16 inch in thickness or diameter below 7-16 inch.

6.—The test specimen shall bend cold around a pin without cracking on the outside of the bent portion, as follows:

Thickness or diameter of bar.	Plain bars.	Deformed and hot-twisted bars.
Under ¾ inch	180 deg. d = 3 t	180 deg. d = 4 t
¾ inch or over	90 deg. d = 3 t	90 deg. d = 4 t

Explanatory note: d = the diameter of pin about which the specimen is bent;
t = the thickness or diameter of the specimen.

7.—(a) Tension and bend test specimens for plain and deformed bars shall be taken from the finished bars, and shall be of the full thickness or diameter of bars as rolled; except that the specimens for deformed bars may be machined for a length of at least 9 inches, if deemed necessary by the manufacturer to obtain uniform cross-section.

(b) Tension and bend test specimens for hot-twisted bars shall be taken from the finished bars, without further treatment.

8.—(a) One tension and one bend test shall be made from each lot of ten tons or less of each size of bar rolled from rails varying not more than 10 pounds per yard in nominal weight.

(b) If any test specimen shows defective machining or develops flaws, or if a tension test specimen breaks outside the middle third of the gage length, it may be discarded and another specimen substituted.

III.—Permissible Variations in Weight.

9.—The weight of any lot of bars shall not vary more than 5 per cent from the theoretical weight of that lot.

IV.—Finish.

10.—The finished bars shall be free from injurious defects and shall have a workmanlike finish.

V.—Inspection and Rejection.

11.—The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the bars ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the bars are being furnished in accordance with these specifications. All tests and inspection shall be made at the place of manufacture prior to shipment, unless otherwise specified, and shall be so conducted as not to interfere unnecessarily with the operation of the works.

12.—Bars which show injurious defects subsequent to their acceptance at the manufacturer's works will be rejected, and the manufacturer shall be notified.

[1]See Section 5.

Standard Specifications for Blooms, Billets and Slabs for Carbon-Steel Forgings

1.—(a) These specifications cover five classes of billets, determined by their carbon ranges as specified in Section 6.

(b) The purposes for which these classes are frequently used are as follows:

Class A, for welding and case-hardening.
Class B, for case-hardening when subsequently heat-treated.
Class C, for special purposes.
Class D, for axles, shafts, connecting rods and similar forgings.
Class E, for Class D forgings when they are to be heat-treated.

2.—The term "billets" will be used in these specifications to designate blooms, billets and slabs.

3.—(a) Billets shall be purchased as semi-finished rolled or forged material. In ordering, all dimensions shall be expressed in feet and inches.

(b) Unless otherwise specified, the billets shall be made from ingots of at least four times the sectional area of the billet.

I.—Manufacture.

4.—The steel shall be made by the open-hearth process.

5.—A sufficient discard shall be made from each ingot to secure freedom from injurious piping and undue segregation.

II.—Chemical Properties and Tests.

6.—The steel shall conform to the following requirements as to chemical composition[1]:

Elements considered. per cent.	Class A	B	C	D	E
Carbon, per cent...	0.08—0.18	0.15—0.25	0.25—0.38	0.38—0.52	0.45—0.60
[2]Manganese .	0.30–0.50	0.30–0.50	0.40–0.60	0.40–0.60	0.45–0.70
Phos., max..	0.045	0.045	0.045	0.045	0.045
Sulphur, max.	0.05	0.05	0.05	0.05	0.05

7.—An analysis shall be made by the manufacturer from a test ingot taken during the pouring of each melt, a copy of which shall be given to the purchaser or his representative. This analysis shall conform to the requirements specified in Section 6.

8.—(a) Analyses may be made by the purchaser from at least one billet representing each melt, which shall conform to the requirements specified in Section 6. Drillings for analysis shall be taken from the billet with a 5/16-inch drill, parallel to the axis of the ingot as cast, at any point midway between the center and surface.

(b) In addition to the complete analysis specified in Paragraph (a), a carbon determination may be made by the purchaser of drillings taken from the center of the billet with a 5/16-inch drill, parallel to the axis of the ingot as cast, to determine by the variation in carbon the amount of segregation.

III.—Workmanship and Finish.

9.—The billets may be chipped to a depth not over ½ inch, unless otherwise specified. Chipping shall be done in such a manner as not to cause laps when the billets are properly forged.

10.—The billets shall be free from injurious defects and shall have a workmanlike finish.

IV.—Marking.

11.—The melt number shall be legibly stamped on each billet 6 inches in thickness or over, and the top end of all "top cut" billets of such sizes shall be hot-stamped with the letter "T" and such ends criss-crossed with green paint. The melt number shall be legibly stamped on billets of smaller section when specified.

V.—Inspection and Rejection.

12.—(a) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the billets ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the billets are being furnished in accordance with these specifications. Tests and inspection at the place of manufacture shall be made prior to shipment.

(b) The purchaser may make the tests to govern the acceptance or rejection of billets in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

(c) All tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the works.

13.—(a) Unless otherwise specified, any rejections based on tests made in accordance with Section 12(b) shall be reported within five working days from the receipt of samples.

(b) Billets which show injurious defects while being finished by the purchaser will be rejected, and the manufacturer shall be notified.

14.—Samples tested in accordance with Section 12(b), which represent rejected billets, shall be preserved for two weeks from the date of the test report. In case of dissatisfaction with the results of the tests, the manufacturer may make claim for a rehearing within that time.

[1]The chemical requirements as to manganese and phosphorus have purposely been made somewhat lower than those in the standard specifications for finished products for the protection of the purchaser of billets, so that with reasonable variations from segregation in the billets the finished product will meet the specified chemical requirements.

[2]See Section 8 (b).

test pieces to 15 per cent for the larger. The nickel steel series showed a decline in maximum strength from 209,500 pounds per square inch for the ½-inch bars to 99,100 pounds per square inch for the 1¾-inch bars, while the elastic limit declined from 117,000 to 50,900 pounds per square inch; the reduction of area declined from 44.3 to 34.8 per cent, but the elongation in 4 inches increased from 7 to 26.2 per cent. The Brinell hardness numbers of the chrome-vanadium test pieces ranged from 475 to 510 for the smaller pieces and for the larger sizes from 355 to 375. These hardness tests were made on the outside of the pieces. The hardness numerals of the nickel steel series ranged from 394 for the ½-inch piece to 248 for the 1¾-inch test bar.

Influence of Mass in Heat-Treatment

"The Influence of Mass in the Heat-Treatment of Steel", by K. W. Zimmerschied, which detailed a novel series of tests on composite bars will be published in an early issue of THE IRON TRADE REVIEW. John H. Hall submitted a paper entitled "The Heat-Treatment of Hypo-Eutectoid Carbon Steel Castings", which showed briefly the behavior of cast steels with carbon contents of less than the eutectoid ratio of 0.90 per cent, under varying conditions of heat-treatment. The tests reported indicate that in order to produce a fine microstructure in cast steels, it is necessary to restrain or suppress the tendency toward coarse crystallization by accelerated cooling, since slow cooling results in coarse structure.

As the effect of rapid cooling is to harden steel considerably, and at the same time to produce harmful stresses in castings of uneven section, a second heating to soften the steel and to relieve the stresses is necessary. This heating, however, must not exceed 680 degrees Cent. for quenched steel and 720 degrees for air-cooled steel. This paper will be published in full in an early issue of THE IRON TRADE REVIEW.

Preservative Coatings

A symposium of papers and reports on Preservative Coatings for Iron and Steel was presented at one session. Committee reports on The Corrosion of Iron and Steel and on Preservation Coatings for Structural Materials were submitted and a paper entitled "Tests on the Rate of Corrosion of Metals", by A. W. Carpenter, was read in abstract.

Committee D-1, through its sub-committee, B, reported the results of a further inspection of the Havre de Grace bridge. It will be recalled that steel test panels were placed on this bridge in 1906, 19 paints submitted by 16 different manufacturers having been applied. The spreading rates were 600, 900 and 1,200 square feet per gallon of paint. Inspections have been made from time to time to ascertain the extent of chalking, checking, cracking, alligatoring and general surface conditions. The tests indicate that the natural spreading rate is apparently 900 square feet per gallon. As originally contemplated, an attempt should be made to classify the paints from their compositions, but this has been found to be impracticable. Inspections of the Havre de Grace bridge also were made by engineers of the Baltimore & Ohio railway, New York Central & Hudson River Railway Co., Pennsylvania railroad and the Norfolk & Western Railway Co. The results compare favorably with those reported by the committee.

The further report of the Atlantic City steel paint tests also was submitted, but this, of course, was not conclusive. The last test was made on April 16, this year, and the pigments which have given the best results in the order of their rating follow: American vermilion, zinc chromate, natural graphite, zinc and barium chromate, chrome green and sublimed blue lead. Standard specifications for the purity of raw linseed oil from North American seed were submitted and referred to letter ballot, as well as definitions of terms used in paint specifications.

Rate of Corrosion

An interesting paper entitled "The Rate of Corrosion of Metals," by A. W. Carpenter, contained further results of the second and third series of corrosion tests described in Mr. Carpenter's paper and presented before the society in 1911. The first series of tests was made to ascertain the rate of corrosion of metals exposed to locomotive gases. One series of corrosion tests now in progress has been instituted mainly to ascertain the effect of gaseous atmospheres on copper and aluminum. Specimens of these metals were exposed in the Weehawken tunnel and the High Bridge engine house. The tunnel rate of corrosion on the aluminum was found to be a mean between the steel and wrought iron and after the last exposure in the tunnel the aluminum specimen presented a badly disintegrated appearance. In the engine house the aluminum plate was badly corroded during the first exposure and this disappeared entirely during the second exposure. The rate of corrosion of the copper was about the same as that of the aluminum in the first tunnel exposure, but it dropped to a small fraction of the same for the second exposure. In the engine house the rate was lower than any of the other metals, but not greatly so, and the rate was sustained in the second exposure in about the same proportion as for the other metals. It is the intention to continue the tunnel and weather tests and to add additional series to check the results already obtained and to gain information regarding other kinds of metals and coatings.

In the third series of Weehawken tunnel tests, after 418 days' exposure, the relative order of resistance of the metals tested follows:

1.—Special non-ferrous metal plate; 2.—Lead-coated galvanized steel plates; 3.—Special iron galvanized plate, *B;* 4.—Special iron galvanized plate, *A;* 5.—Special iron plain plate, *A;* 6.—Soft open-hearth plain plates, special iron *B* plain plates and open-hearth steel plain angles; 7.—Wrought iron plain plate; 8.—Bessemer steel plain bars; 9.—Bessemer steel, plain angles; 10.—Open-hearth steel, plain bars.

The calculated rate of corrosion per annum in thickness per surface varied from 0.006 to 0.017 inch. The method of calculating corrosion on metal surfaces by grams per square inch was objected to by Allerton S. Cushman on the grounds that it is not representative of the amount of the corrosion of the most deeply pitted section of the plate. The same objection could apply to the surface corrosion measured in inches.

With reference to the Atlantic City tests it was reported that a number of panels have been removed which showed entire decay. As the property on which the panels were exposed is no longer available for this purpose, they will be removed to one of the ocean piers where the weather test is to be continued for several years.

Priming and Top Coat Values

A test for indicating the relative priming and top coat values of different paints applied to iron and steel, was outlined by W. McNaughton. He stated that the best protection against corrosion is not secured by the use of any one kind of paint, but by the use of different paints in combination. It has been found by experience that certain paints are excellent as primers, while others give the best service when used as top coatings.

Three years ago the test was inaugurated with steel plates, 10 x 16 inches, which were exposed on the roof of a factory within 100 yards of a railroad and one-half mile from salt water. The upper half of each panel was painted with one of the two paints tested on this panel, while the lower half was painted with the other. When dry, the left half of the plate was coated with the first paint and the right half, with the second paint. A total of 26 panels

was coated in this manner and all of the panels were exhibited at the Hotel Traymore, where they attracted considerable attention.

A distinct line of demarkation was noticeable on all the plates, clearly showing the outlines of the various paint applications. One plate showed a distinct difference in tone between the upper and lower right-hand quarters. This was due to the underlying red lead coat in the upper quarter. The graphite coating over the red lead retained its luster, while it had lost it when applied over itself as a priming coat. While these tests were not offered as conclusive, nevertheless, the application of various paints on one plate insures easier comparison than when made on separate plates, with the added advantage of eliminating the uncertainty as to the character of the metal itself.

Method of Electing Officers

A petition signed by 32 members of the Society offering an amendment to the by-laws providing for a change in the method of procedure followed in the election of officers, was presented at the opening business session. The amendment proposed the selection of the nominees by a primary ballot, the two receiving the highest number of votes for each office to be filled, to be the nominees in the contest for the election, to be participated in by all of the members of the society. As the by-laws provide that any amendment must be presented to the executive committee at least nine weeks before the annual meeting, the petition with this amendment was not entertained. However, as a result of the ensuing discussion, the executive committee was instructed to formulate a plan for the nomination and election of officers to be reported at the next annual meeting.

The committee on papers, through its chairman, Edgar Marburg, reported that it has adopted regulations governing the presentation of papers, committee reports and discussions. The committee has also formulated certain administrative regulations for its own guidance, which are designed, on the one hand, to safeguard the interests of the Society as well as those of intending contributors to the *Proceedings,* and on the other, to avoid vexatious delays and serious dissatisfaction that would be apt to result from unnecessary "red tape".

The committee spared no effort to make the new regulations operative at once in relation to the material presented at the last meeting, with the following results: Of the 23 committee reports and 38 papers included in the program for the annual meeting, 21 committee reports and 31 papers have been put in print in advance of the meeting, and with relatively few exceptions this matter was distributed among the membership of the Society from two to four weeks before the date of the meeting.

At the time of registration, each member was presented with ten large Manila envelopes, each containing the papers and reports presented at each of the ten sessions. This method of distributing the printed matter for the entire meeting received many favorable comments and the system inaugurated by Secretary Marburg can be adopted to advantage by other technical societies.

Several years ago, rules governing the organization of technical committees were adopted, which provided that manufacturers or their representatives could not hold chairmanships of these committees. However, one manufacturer still holds such a chairmanship and a resolution prepared by the executive committee and adopted by the Society provides for the automatic termination of such chairmanships on Sept. 1, this year.

Non-Ferrous Metals and Alloys

One entire session was devoted to the discussion of non-ferrous metals and one of the interesting features of this meeting was the report of Committee B-2 on non-ferrous metals and alloys. Standard specifications for lake and electrolytic copper were adopted and referred to letter ballot, but the committee found it difficult to prepare a specification for casting copper. Summarizing the results of its investigation, the committee reported that it is not reasonable to expect either low resistivity or conductivity from casting copper and as its name implies, it is exclusively a foundry copper. The copper contents are variable, the better known brands containing over 99 per cent and in some cases of virgin copper, an assay of 99.9 per cent is maintained regularly. As long as the copper is clean, free from slag or dirt and shows good fluidity when melted, little objection can be made to the particular impurities which may be present.

Copper Casting Alloys

The sub-committee on copper casting alloys reported that it confined its work to the revision of the present specifications for manganese bronze, but on account of the fact that the present method of taking test specimens is not satisfactory, it was decided to let the present specification stand and to refer it back to the sub-committee for complete revision.

The sub-committee on white metals reported that it has conducted investigations on five alloys, which represented the most widely used babbitt metals in service. Arranged in respect to their hardness, these alloys follow:

No. 1.—Tin, 83.33 per cent; antimony, 8.33 per cent, and copper, 8.33 per cent.
No. 2.—Tin, 89 per cent; antimony 7 per cent, and copper, 4 per cent.
No. 3.—Tin, 50 per cent; antimony, 15 per cent; copper, 2 per cent, and lead, 33 per cent.
No. 4.—Tin, 5 per cent; antimony, 15 per cent, and lead, 80 per cent.
No. 5.—Antimony, 10 per cent, and lead, 90 per cent.

The committee reported that probably it will be able to present, at the next annual meeting, recommendations for satisfactory specifications for babbitt metals. These recommendations will include from five to seven standard formulas, standard methods of sampling and analysis, recommendations for proper heat-treatment and method of manufacture, and physical tests which will show whether the alloy has been properly proportioned and subjected to correct heat-treatment.

A number of changes in the standard specifications for copper wire also were made. The specific gravity of copper which formerly was standardized in these specifications at 8.90 has been changed to 8.89. Other changes relate to conductivity and resistivity.

Tests of Bearing Metals

T. D. Lynch, of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., presented the results of an interesting study of bearing metals, and the methods of testing also were described. It has been generally known by manufacturers of bearing metals, that the mixtures frequently are ruined by remelting in plants where the metal is cast into bearing boxes. To ascertain the proper remelting temperatures and the best alloys adapted to general service, this investigation was undertaken.

The conclusions drawn as a direct result of these tests, together with a large amount of service experience, were summarized as follows:

The number of compositions of babbitt metals should be as few as possible, preferably one of the tin-base and one of the lead-base, and each should be made the best of its class.

The constituent metals must be of superior grade, since the first requisite is a good raw material.

The alloying or smelting is of vital importance and must be so done that the high and low melting point metals may be properly alloyed far below the melting point of some of the component parts. A temperature of 500 degrees Cent. and less has been found to be sufficient to obtain satisfactory alloying of babbitt metal. The melted metal should at all times be kept covered with powdered charcoal or other protection from oxidation.

Pouring the babbitt too cold tends to produce a granular or coarse crystal formation and pouring it too hot tends to produce a softening effect. The lead-

base babbitt is not nearly as fool-proof as the tin-base and, therefore, the range of pouring temperature is more limited. However, a pouring temperature of 460 degrees Cent. for both lead-base and tin-base babbitts has been found to give excellent results.

Heating the shell to 100 to 150 degrees Cent. before the babbitt is poured into it tends to prevent blow-holes and similar defects and also prevents the lining from shrinking away from the shell.

Babbitted bearings must not be jarred while the metal is solidifying since any disturbance at this temperature tends to enlargement of the crystals and corresponding brittleness.

The matrix of the lining metal should be just stiff enough to support the hard crystals. These hard crystals should be as numerous as possible and yet not lie on each other to cause brittleness.

A Brinell hardness of 23.5 for lead-base and 30 for tin-base babbitts has been found to give excellent results.

In the discussion of Mr. Lynch's paper, G. H. Clamer, of the Ajax Metal Co., Philadelphia, suggested that probably the injury to the metal was due indirectly to the high temperatures employed in melting, and he was of the opinion that oxidation probably was the primary cause. As the melting points of these metals and mixtures are comparatively low, he stated that charcoal was of little value in protecting the metal against oxidizing influences and believed that some other material would have to be employed in place of charcoal to protect the tin-base and lead-base alloys.

John A. Capp, of the General Electric Co., Schenectady, N. Y., divided bearings into two classes, namely those which support friction and dead loads, and those which are subjected to a peening action in addition to the friction and dead load. For the latter it has been found that a tin-base alloy gives excellent service, while for the former a lead-base mixture is recommended.

William Campbell, of the Columbia University, New York City, presented a "Metallographic Study of Lead-Tin-Antimony Alloys", which was illustrated with lantern slides. "The Strength of Cast Zinc or Spelter" was the subject of a joint paper by Gilbert Rigg and G. M. Williams, which compared the relative strength of various brands of spelter, the tests having been carried out under the same conditions.

Testing Apparatus

"Testing Apparatus and Methods", was the subject of papers and discussions assigned to one session. E. L. Lasier presented a list of large capacity testing machines in the United States and England, 23 of which have a capacity of 600,000 pounds and larger; 20 of these machines are in the United States and three in England; 10 machines of 1,000,000 pounds or more capacity are at various laboratories in the United States. Other papers presented during this session follow: "Spherical Bearings", by Mont Schuyler; "A Repeated Stress Testing Machine", by J. B. Kommers, and "The Use of the Strain Gage in the Testing of Materials".

Specifications for Wrought Iron Plates

At the recent meeting of the American Society for Testing Materials, held at Atlantic City, new specifications for wrought iron plates were presented and were referred to the Society for adoption by letter ballot. While tonnage of wrought iron plates produced is comparatively small, nevertheless the provisions of the new standard should prove of interest and value to both manufacturers and users of iron plates. The specifications follow:

1. — These specifications cover two classes of wrought iron plates, namely:
Class A, as defined in Section 2 (*b*);
Class B, as defined in Section 2 (*c*).

Manufacture

2.—(*a*) All plates shall be rolled from piles entirely free from any admixture of steel.

(*b*) Piles for Class A plates shall be made from puddle bars made wholly from pig iron and such scrap as emanates from rolling the plates.

(*c*) Piles for Class B plates shall be made from puddle bars made wholly from pig iron or from a mixture of pig iron and cast iron scrap, together with wrought iron scrap.

Physical Properties and Tests

3.—The plates shall conform to the following minimum requirements as to tensile properties:

	Class A.	
Properties considered.	6 to 24 inches, inclusive, in width.	Over 24 to 90 inches, inclusive, in width.
Tensile strength, pounds per square inch	49,000	48,000
Elastic limit, pounds per square inch	26,000	26,000
Elongation in 8 inches, per cent	16	12

	Class B.	
Properties considered.	6 to 24 inches, inclusive, in width.	Over 24 to 90 inches, inclusive, in width.
Tensile strength, pounds per square inch	48,000	47,000
Elastic limit, pounds per square inch	26,000	26,000
Elongation in 8 inches, per cent	14	10

4.—For plates under 7/16 inch in thickness, a deduction of 1 from the percentages of elongation specified in Section 3 shall be made for each decrease of 1/16 inch in thickness below 7/16 inch.

5.—(*a*) *Cold-Bend Tests.*—The test specimen shall bend cold through 90 degrees without fracture on the outside of the bent portion, as follows: For Class A plates, around a pin, the diameter of which is equal to 1½ times the thickness of the specimen; and for Class B plates, around a pin, the diameter of which is equal to 3 times the thickness of the specimen.

(*b*) *Nick-Bend Tests.*—The test specimen, when nicked on one side and broken, shall show for Class A plates a wholly fibrous fracture, and for Class B plates, not more than 10 per cent of the fractured surface to be crystalline.

6.—Tension and bend test specimens shall be taken from the finished plates and shall be of the full thickness of plates as rolled. The longitudinal axis of the specimen shall be parallel to the direction in which the plates are rolled.

7.—(*a*) One tension, one cold-bend and one nick-bend test shall be made for each variation in thickness of ⅛ inch and not less than one test for every ten plates as rolled.

(*b*) If any test specimen fails to conform to the requirements specified through an apparent local defect, a retest shall be taken; and should the retest fail, the plates represented by such test shall be rejected.

Finish

8.—The plates shall be straight, smooth and free from cinder spots and holes, and free from injurious flaws, buckles, blisters, seams and laminations.

Inspection and Rejection

9.—(*a*) The inspector representing the purchaser shall have free entry at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the plates ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the plates are being furnished in accordance with these specifications. Tests and inspection at the place of manufacture shall be made prior to shipment.

(*b*) The purchaser may make the tests to govern the acceptance or rejection of plates at his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

WAGE QUESTION

Will be Investigated—Admiral's Estimate of Armor Plate Plant.

Washington, July 1.—Wages paid government employes in the navy yards were given attention at a joint meeting yesterday of the senate and house naval affairs committees. No discussion of specific systems was taken up. Secretary of the Navy Daniels, who attended the meeting, was authorized to appoint a board to look into the wage question with a view to making a readjustment. He told a representative of THE IRON TRADE REVIEW that he had come to the conclusion that by the act of congress dealing with wages at navy yards, the Washington employes had been granted an increase.

As was shown at the hearings of employes at the different yards on June 11, and through briefs filed with the navy department, there is dissatisfaction among the employes. Many contend that they are not being paid as much as is being paid for similar work in other yards. The request of employes in the Norfolk yards for further hearings will not be granted now that it has been decided to make a personal investigation of the situation. The Norfolk employes complain that higher wages are being paid at the New York yards than are paid in the Norfolk yards.

It was expected that the armor plate matter might be taken up at the joint meeting. The report of Admiral Twining of the ordnance bureau was thought likely to be submitted, but this question was not mentioned, Mr. Daniels said.

Admiral Twining, when seen a few days ago by a representative of THE IRON TRADE REVIEW, would not say what his report deals with, but it is strongly believed that he is opposed to the idea of the government buildings its own armor plate plant. He has placed an estimate of $8,000,000, it is said, on the plant and equipment alone, exclusive of the site, for a yearly output of 8,000 tons. Approximately, he puts the cost at $1,000,000 per 1,000 tons.

OBITUARIES

Edward Y. Swift, president of the Michigan Bolt & Nut Works, Detroit, died June 15 at the age of 86.

John Lynn, manager of the Fuller Iron Works, Providence, R. I., and widely known as a consulting engineer, is dead, aged 65.

Wm. H. Wray, president of the National Brass Mfg. Co., Rochester, N. Y., died June 22 at the Lee hospital, Lake avenue, after an illness of three months, aged 47. Mr. Wray was the son of Henry Wray, founder of the company that bears the family name.

Charles H. Spaulding, a pioneer iron manufacturer, died at his home in Steubenville, O., last week at the age of 72 years. He was born at Etna, Pa., where he was secretary of the old Jefferson Iron Works. When this company went out of business, he organized the Spaulding Iron Works.

Howard H. Dickey, president of the United States Rail Co., Cumberland, Md., died at Cumberland, June 25, from an attack of typhoid fever. He was 41 years of age. Mr. Dickey was a native of Philadelphia and a son of the late W. C. Dickey. With his father he organized the Cumberland Sheet & Tin Plate Co., which was later leased to the N. & G. Taylor Co., Philadelphia.

Robert Butterworth, president of the New Jersey Agricultural Works, Trenton, N. J., died at his home, 345 Hamilton avenue, early Thursday morning, June 19. Death was caused by paralysis. Mr. Butterworth was born in Pawtucket, R. I. He moved to Trenton when a boy and at the age of 20 years organized the agricultural plant, with his brothers, John, James and William. The deceased was also connected with the Butterworth Coal Co.

J. N. Vance, veteran iron maker, Wheeling, W. Va., died last week of heart failure. After conducting a retail iron business for several years he organized Dewey, Vance & Co. in 1861 and initiated bar iron making in the Wheeling district. The firm grew rapidly and in 1875 was incorporated as the Riverside Iron Works. The company was absorbed by the National Tube Co. in 1889.

ANNUAL REPORT

Of United States Cast Iron Pipe & Foundry Co.

Production by the United States Cast Iron Pipe & Foundry Co. for the year ended May 31, 1913, exceeded all previous records, according to President L. R. Lemoine, in his statement to stockholders in the annual report of the company issued June 26. The net earnings, after deducting all expenses and reserves, amounted to $564,426, compared with $527,977 for the year preceding. For improvements and replacements, $96,000 was set aside, compared with $63,700 the previous year. Larger deductions were also made for the reserve for doubtful accounts.

GRANTS PETITION

For Reopening Case Attacking Buffalo Rate on Coke.

Washington, July 1.—The Interstate Commerce Commission has granted the petition of the Wickwire Steel Co., et al., for a reopening of their case attacking the rate of $1.85 per ton on coke from the Connellsville region to the Buffalo district. The defendants are the New York Central & Hudson River Railroad Co., et al.

In the recent coke rate decisions the commission found that the rate of $1.85 was not unreasonable.

Taking up this point, and using it as an argument for a rehearing, the complainants in their petition say that, if the commission decided the case against them, it should have been in the affirmative; that the increased rate was just and reasonable. By the increased rate the petition refers to the advance made in 1910.

But the finding in the affirmative was not forthcoming, according to the petition, "for the very good reason that there was absolutely no evidence in the record and none is referred to in the decision of the commission which even tended to show that the rate was just and reasonable".

Objection is also made to coke rate map used in making the decision. The petitioners say they were not parties to this map. It is pointed out that apparently the case was decided against them upon the theory of the construction of this map in other cases.

The position taken by the commission was that, in connection with the map, the cases must be decided together. Reference to this is made by the petitioners in the following language:

"It would be hard to torture this impression of the commission into a compliance with the views of the Supreme Court which would seem to authorize the commission to take notice of results reached by it in other cases when its doing so is made to appear in the record and the facts thus noticed are specified, as that matters of law are saved."

In addition to the Wickwire Steel Co. the defendants include the Buffalo Furnace Co., the Tonawanda Iron & Steel Co., the New York State Steel Co., and the Lackawanna Steel Co.

The petitioners contend that the effect of the decision would be a serious blow to makers of pig iron at Buffalo and that since the increased rate on coke went into effect little or no profit has been made by manufacturers of pig iron at that point.

FOREIGN MARKETS

GERMAN IRON TRADE

Berlin, June 12.

Depression rules in the iron trade here and it is impossible to ignore the slide down in prices. Bars have been sold for export at 100 marks ($23.50) f. o. b. Antwerp, and in the home market 104 marks ($24.44) has been accepted. The Westphalian Hoop-Iron Syndicate reduced prices by 5 marks ($1.17½) minimum. Steel ingots are 2 shillings (49 cents) lower at 88 shillings ($21.42), billets are reduced 2 shillings and 6d to 90 shillings and 6d (61 cents to $22.02), sheet bars 2 shillings to 93 shillings (49 cents to $22.63), rods 4 shillings to 103 shillings to 104 shillings (97 cents to $25.07 to $25.31), hoop-iron 1 shilling to 135 shillings to 136 shillings (24½ cents to $32.86 to $33.11), steel plates to 116 shillings to 117 shillings ($28.24 to $28.48), sheets No. 12-14 to 120 shillings ($29.21), sheets No. 20 to 145 shillings ($35.31), and wire nails 0-7 are 9d (18 cents) cheaper at 6 shillings and 9d to 7 shillings ($1.64 to $1.70) per keg f. o. b. Antwerp. At Dusseldorf ordinary steel plates have fallen 2½ marks (58.75 cents) at 122½ to 127½ marks ($28.78¾ to $29.96¼), boiler plates the same at 132½ to 137½ marks ($31.13¾ to $32.31¼), and sheets at 130 to 135 marks ($30.55 to $31.72½). Frantic efforts are now being made to stem the tide by the renewal of old and the formation of new syndicates and export is to be stimulated by the revival of export bonuses, the coal syndicate agreeing to pay 1 shilling (24½ cents) per ton and the pig iron syndicate 1 shilling and 6d (36½ cents) per ton.

RUSSIAN IRON TRADE

St. Petersburg, June 11.

The Russian iron trade continues to prosper pretty much on the lines that prevailed in 1912, respecting which a report just issued shows that year to have been one of remarkable prosperity for the country. The pig iron production made 256,266,000 poods against 219,363,000 p. in 1911 and 185,595,000 p. in 1910 (4,133,322 tons, 3,376,822 tons and 2,993,467½ tons). Along with this the business in half products and finished products was, at all events respecting the former, correspondingly good; in fact, a record. The fine trade applies to all the iron districts of Russia; though it is in the Donetz basin that it is most marked. Here are Russia's great iron reserves and it is clear that a development has taken place, to a large extent swamping all the other Russian iron districts. Heavy rails were produced in large quantities; but the export of this article, though great some years ago, has completely stopped, owing to home requirements, and will not likely be resumed for a long time to come for the same reason. Rolling stock orders have been distributed amongst a certain number of builders, which will keep them comfortably employed for the next 24 or 36 months.

BELGIAN IRON TRADE

Brussels, June 12.

The drop in prices has benefited trade to such extent here that a number of works have secured orders sufficient to occupy them for some weeks to come. As a consequence the downward movement has been slower during the past week, and mainly confined to bars and plates. For the home market steel bars have been reduced 5 francs to 140 to 145 francs (95 cents to $26.60 to $27.55), iron bars 2½ francs to 157½ francs to 162½ francs (47½ cents to $29.92½ to $30.87½), and hoop iron 2½ francs to 177½ francs to 182½ francs (47½ cents to $33.72½ to $34.67½) per ton. For export iron bars are 3 shillings (73 cents) lower at 103 shillings to 105 shillings ($25.07 to $25.56); steel bars have been reduced 2 shillings to 3 shillings to 102 shillings to 103 shillings (49 cents to 43 cents to $24.83 to $25.07), and plates 2 shillings to 115 shillings to 117 shillings (49 cents to $27.99 to $28.48) per ton f. o. b. Antwerp, but it is understood that business has been accepted at 101 shillings ($24.58½) for bars, 115 shillings ($27.99) for rods, 115 shillings ($27.99) for plates, 117 shillings ($28.48) for medium, and 121 shillings ($29.45½) for thin sheets. Compared with a month ago, pig iron is 5 francs to 9 francs (95 cents to $1.71) lower, with Thomas iron at 48 francs ($15.96), puddling iron at 79 francs ($15.01) Charleroi, and 73 francs ($13.87) Luxemburg, and Luxemburg foundry at 80 francs ($15.20).

FRENCH IRON TRADE

Paris, June 12.

French metallurgy is being favored by somewhat extensive orders from the railway companies, notably the Paris, Lyons Mediterranean; and considerable orders have been given off for tubes as well as for rolling stock. Prices are quoted as follows: Merchant iron No. 2, 20-21 francs ($3.80-$3.99), Paris; 18-18.50 francs ($3.42-$3.51), Nord; merchant steel, 20-21 francs ($3.80-$3.99), Paris, and 18-18.50 francs ($3.42-$3.51), Nord; special steel, 21.50-22.50 francs ($4.08½-$4.27½); Paris, and 20 francs ($3.80), Nord; sheets, 22-24 francs ($4.18-$4.56), Paris; 20.50 francs ($3.89½), Nord; girders, 22-23.50 francs ($4.18-$4.46½), Paris; plates, 3 mm. and over, 24-25 francs ($4.56-$4.75), Paris; 22-23 francs ($4.18-$4.37), Nord. Rolled soft steel is not quoted for either market, but in the Upper Marne and Center Loire prices are 20.50 ($3.89½) and 20.75 francs ($3.94¼), respectively, per 100 kilograms. Notwithstanding the political situation and its dangers, French metallurgy appears to be pretty healthy, and if it were judged by the demand for coal must be called brilliant.

LARGE IRON WORKS

Will Be Built in Sweden—Product Will Take Place of Imports.

Nykoping, Sweden, June 11.

A powerful syndicate under the auspices of the Traffic Co., of Grangesberg-Oxelosund, Ltd., the most important limited company in Sweden, is planning the erection of large iron works, electricity works, and coke ovens in Oxelosund, which may be considered as an exterior port of Nykoping. These iron works are to be on a large scale and capable of an annual output of about 80,000 tons of foundry pig iron, which corresponds to the present entire import of this article into Sweden. The new iron works will also be exceedingly well situated for exportation to the countries round the Baltic, particularly Finland and Russia. The company is said to have made a contract on very favorable terms for the supply of iron ore from the mines at Grangesberg. It will make coke to meet its own requirements, and will in addition be able to sell about 40,000 tons of coke every year.

An independent expert has placed a value of $27,000,000 on the Dominion Steel Corporation's iron ore areas at Wabana, exclusive of the undeveloped areas beyond the holdings of the Nova Scotia Steel & Coal Co., where it is estimated 100,000,000 more tons may lie.

Announcement is made by the receivership of the Payne & Joubert Foundry & Machine Co., Birmingham, Ala., that the plant will be kept in full operation, and that all contracts now on record will be filled.

THE IRON TRADE REVIEW

DEVOTED TO THE IRON, STEEL, MACHINERY AND FOUNDRY INDUSTRIES

Published Every Thursday by

The Penton Publishing Company

CLEVELAND

BOSTON	201 Devonshire Street
CHICAGO	1521-23 Lytton Bldg.
CINCINNATI	503 Mercantile Library Bldg.
NEW YORK	503-04 West St. Bldg.
PHILADELPHIA	611 Bulletin Bldg.
PITTSBURGH	2148-49 Oliver Bldg.
WASHINGTON, D. C.	501 Metropolitan Bank Bldg.
BIRMINGHAM, ENG.	Princes Chambers

Copies published three months or more previous to date of current issue, 25 cents each.

All communications relating to changes of advertising copy, discontinuances, etc., must be received ten days prior to the next publishing date.

Subscription, United States and Mexico $4.00 per year.
Canada $5.50 and other Foreign Countries $8.00 a year.

Entered at the Postoffice at Cleveland as Second Class Matter.

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Cleveland, July 3, 1913

The Virtuous Colonel

Seized by a sudden spasm of virtue, one M. M. Mulhall, otherwise known as "colonel", has sold to a newspaper a large amount of private correspondence relating to the campaigns which have been carried on during the past ten years by the National Association of Manufacturers.

The first thought that occurs to one is that it is remarkably strange that after having been engaged as an employe of the association for ten years, the virtuous and patriotic colonel should rush into print and tell about the wickedness of his associates. If this work was so malicious, why did he not quit it long ago? Why wait until his services were no longer needed and then sell the story to a newspaper?

The vigorous statement of James A. Emery, who has long been identified with the National Association of Manufacturers, thoroughly discredits the Mulhall "confession". Of course, there is a grain of truth in what Mulhall says, for the National Association of Manufacturers has long been engaged in opposing legislation advocated by labor unions. But that there has been any corrupting of members of congress or labor unions is positively denied by Mr. Emery, who goes on to explain specifically the particulars in which the Mulhall statements are absolutely false.

The names of such men as Van Cleave, Parry, Kirby and many others who have rendered important services to the manufacturers of the country cannot be successfully attacked by a man of the character of Mulhall. By all means let the sensation monger, who is now quarreling with his associate one Richard Berry, as to the division of the $10,000 paid by the newspaper for the story, be placed upon the stand and given an opportunity to defend himself. Perhaps, after the evidence has been submitted, manufacturers who are not members of the association, as well as those who are, will have a clearer idea of the services which the association has rendered in fighting vicious legislation.

Although President Wilson signed the sundry civil bill containing the obnoxious provision in regard to labor unions and farmers' organizations, he added his condemnation to that of President Taft. While President Taft spoke of the proviso as class legislation of the worst kind, President Wilson declares it is unjustifiable in character and principle. Under these conditions, the labor leaders and the politicians subservient to the unions cannot view their victory with much satisfaction. It is especially gratifying to know that the president has found a way of prosecuting offenders without using the funds appropriated by the sundry civil bill.

Commissions Are Making Progress

The recent decision of the United States Supreme Court in the Minnesota rate cases is generally considered as unfavorable to the railroads. It is credited with being responsible for the recent sharp slump in prices on the stock exchange and with causing a somewhat depressing feeling among manufacturers closely identified with the railroads.

Excellent reasons for believing that the general opinion as to the decision is not well founded are given by *The Financial Chronicle,* a very able advocate of the interests of the railroads. *The Chronicle* points out that while it is often annoying to submit to simultaneous regulation and supervision by the states and the nation, there is no cause for alarm because the court has decided that the power which has always resided in the states is still to reside there. "It is to be remembered," says *The Chronicle,* "that the United States Supreme Court exists to prevent abuse of their power by the states and it has never failed in its duty in that respect. That judicial tribunal has always upheld the right of state regulation—the right to prescribe rates and to impose other conditions—but it has also held the states to rigid accountability for their acts." *The Chronicle* says that it is protection against federal regulation and federal encroachment that is the need of the hour, and points out that the Interstate Commerce Commission has grievously blundered many times in regard to facts. True it is, that the Interstate Commerce Commission has been in error, but it is making progress, and so are the state commissions. *The Chronicle* believes that state regulation in the past has been distinctly superior to national regulation. We are by no means certain of this, but whether it is true or not, there

is still much room for improvement. Gradually the problems will be worked out. To a constantly increasing extent, the decisions are receiving the approbation of the intelligent business man, many of whom are helping the various commissions to arrive at just decisions. In taking a stand against the doctrine that railroads have the right to so adjust rates as to adjust assembling costs, the commission has rendered a highly commendable public service.

A Tribute to the Jobber

The jobber is not passing. In spite of all the predictions that have been made for years about his approaching demise, the jobber continues to prosper and the necessity for his existence is urged even by witnesses who in past years have not been favorable to him.

Col. Henry P. Bope, vice president and general manager of the Carnegie Steel Co., once was among those who considered the jobber a nuisance. But the colonel has changed his mind, and made a confession the other night at a banquet of the American Iron, Steel and Heavy Hardware Association, in Buffalo. Col. Bope declared that at the outset of his business career he could not see the use for any intermediary between the manufacturer and the buying public, but he has completely changed his views. He said he did not like the word "jobber", or the term "middleman", and he suggested the use of the term "distributor" as better and more expressive of what the so-called "jobbers" do. Col. Bope said that the distributor, by his relations to the people who buy from him, comes in contact with the real consumer and learns to know his views. For this reason, the distributor occupies a place in the community different from that of any other seller. The manufacturer gains wider knowledge by reason of his contact with the distributor.

"We look to you," said Col. Bope, "as the stable elements, which in our locality uphold the hands of the manufacturer, not in obtaining excessive or exhorbitant rates, but rates which shall afford a fair measure of profit, and which will enable us to pay a fair wage to the men who labor in our mills and factories."

Col. Bope tactfully referred to the fact that the Steel Corporation is establishing a number of warehouses and expects to have a complete chain from the Atlantic to the Pacific. These warehouses, he said, are to be distributors in the various sections of the country and the Corporation wishes to work with other distributors in their operation.

This tribute to the jobbers, based on many years of experience, emphasizes the importance of personal contact of buyer and seller. By such contact, knowledge of the greatest value to the credit man is obtained and the wants of the consumer are attended to as they could not possibly be without the aid of the jobber or distributor.

Too Many Associations

The American Federation of Stockholders is the name proposed for an organization of stockholders of the country by Walter Drew, commissioner of the National Erectors' Association. Mr. Drew argues at length, stating some indisputable facts to show that the stockholders of many corporations have reasons for complaining in regard to their treatment at the hands of the government. Then he asks whether it is not time the stockholders of the country should develop a class consciousness on industrial issues, that they inform themselves on the matters which directly and vitally affect them, and that they take steps to enforce an intelligent self-interest and to demand and secure respect and recognition for their rights and the rights of corporate business generally.

In our opinion, the developing of class consciousness is just about the last thing the business men of the country should do. Socialists for years have been preaching in favor of the development of class consciousness, and this, we believe, is about the most objectionable feature of the socialistic teaching. Business men could and should inform themselves upon matters of the day which affect them and other people. They should make all proper effort to promote justice, but we do not want, and will not have, any class consciousness on the part of business men. We need business men in politics, not because they belong to any class, but because they are men of constructive ideas. Most of them are intelligent and more or less unselfish, just as other men are.

Another reason for not forming the American Federation of Stockholders is that if this country needs any more organizations at present it needs one for the killing off of organizations. There are too many societies and associations of business men and all other kinds of men in this country. The result is that few of them are as efficient as they ought to be, and many members know almost nothing about their activities and take little part in their doings except to contribute to the financial expense thereof. There is an urgent demand that present associations of all kinds be utilized to the utmost, or abolished, and that no more associations be formed unless positive reason for the need of their existence can be furnished.

There is general agreement as to what is the matter with our currency system and there ought to be general agreement to discuss its reform on a broad, nonpartisan basis. In the case of the tariff, there are fundamental differences of opinion as to free trade and protection, but this is not true of currency reform, and men of all parties ought to be able to get together and adopt a plan which would accomplish great results. If this shall be done quickly, and if the tariff bill shall be passed this month, these two attainments would do much to revive lagging business.

To Discuss Ore Holdings

(*Continued from page 2.*)

another by granting secret rebates, or departing from its published prices.

That there never have been any agreements with foreign manufacturers as to the division of the world's markets.

That the Steel Corporation has been increasing its exports steadily and that it has co-operated at all times with other manufacturers who were seeking to develop a foreign market.

That the Tennessee Coal, Iron & Railroad Co. was purchased solely for the purpose of halting the panic of 1907, and that that company was not then regarded as a competitor of the Corporation.

That the ownership of railroads is necessary to the economic success of the Steel Corporation.

That the Steel Corporation has always endeavored to conduct its business along lines that were satisfactory to the government.

That it has advanced the wages of its workmen steadily, and improved the condition of workmen both in the home and at work.

That the prices of iron and steel commodities have decreased steadily since 1901.

That the consolidations which began in the 90's in the iron and steel business were made necessary for economic reasons.

That the Steel Corporation has greatly improved manufacturing processes and the quality of production by means of a system of comparing the results obtained at its various plants, thus stimulating the plant managers to great rivalry in bringing about results.

That the Steel Corporation has created many new industries, such as the manufacture of cement from blast furnace slag. Also that it has done important work towards the conservation of coal, forests, etc.

That the Corporation has never sought to influence other concerns by means of "interlocking directors".

Lewis Cass Ledyard, New York lawyer, was called to the stand Wednesday and testified in regard to the purchase of the Tennessee Coal, Iron & Railroad Co. during the panic of 1907. He said the Steel Corporation made this purchase for the sole purpose of aiding the brokerage firm, Moore & Schley, and thereby helping to relieve the financial situation. The deal, he said, had its source in a suggestion to him from his client, Col. Oliver H. Payne, that he try to bring about the purchase so Moore & Schley, who were then heavily indebted to Col. Payne, might realize on their large Tennessee holdings. Mr. Ledyard's testimony entirely corroborated that of Judge Gary in reference to the taking over of the Tennessee company. Judge Gary and Mr. Frick, he said, did not regard the project with much favor at first. Judge Gary said he did not think the Tennessee stock was worth much more than 60 or 65. Mr. Ledyard told him that he did not think it was a question of how much the stock was worth, but how much it would take to save Moore & Schley.

"I told him," said Mr. Ledyard, "that the Steel Corporation could get the stock for 25 cents on the dollar if it wanted to wait, but I added that by that time probably the Steel Corporation would not be in a position to buy. Mr. Morgan at that time said he hoped the Corporation would take the Tennessee stock on account of the good it would do to the situation, but he did not feel like appearing to force the deal."

Mr. Ledyard admitted that several large stockholders of the Tennessee company, among them Leonard C. Hanna, were dissatisfied with the sale, as they had great faith in the future possibilities of the concern under the management of John A. Topping. Judge Gary's plan to make the loan of $5,000,000 or $6,000,000 to Moore & Schley was presented by Mr. Ledyard to Mr. Schley, who said it would not do at all.

C. K. Winslow, a clerk under Comptroller Filbert, was next sworn. He testified as to statistics obtained from the records of the American Iron and Steel Association, showing the comparative production of the Seeel Corporation and the independents.

The Tennessee Plant

George G. Crawford, Birmingham, Ala., president of the Tennessee Coal, Iron & Railroad Co., described the condition in which he found the company's properties in 1907. Although the company, under Mr. Topping's administration, had expended $5,412,500 for improvements, the equipment was obsolete and in poor condition. The Steel Corporation has expended $19,-714,000 on improvements. The cost of producing rails at the Tennessee plant in 1907, he said, was $29 per ton. The organization of the company was not in good shape in 1907.

Mr. Crawford said that many of the rails made by the Tennessee company for delivery to the Harriman lines in 1907 were defective. The Harriman system ordered deliveries stopped and refused to take any more rails until 1909, when, on account of the improvement made under the Steel Corporation, the taking of rails was resumed. The Tennessee company had reduced the mill cost of manufacturing rails to $20 per ton.

Southern Prospects

Mr. Crawford explained at some length the advantages and disadvantages of the Birmingham district. Among the advantages are proximity to ore, coal and limestone and the fact that the iron ore contains limestone; while among the disadvantages are the limited demand for iron and steel products and inefficiency of labor. The greatest disadvantage is the necessity of shipping the products long distances. The Tennessee company gets all its ingot molds from the north. It costs $2 per ton more to

Mr. Morgan's Work in the Panic

"I wish you to state, if you will," directed Mr. Lindabury during the examination of Lewis Cass Ledyard, "what was the general attitude of Mr. Morgan during the panic of 1907 and what was the general character of the work he did."

"If you ask what I saw," replied Mr. Ledyard, "I should say that I was there at the library off and on during the crucial part of the panic, and was in touch with him a good deal, with Mr. Baker and Mr. Stillman and other gentlemen, who were working with him. His library was the center in which all the effort at saving things was crystallized; meetings were held there constantly. If anybody had anything that was in trouble he went there with it. Those gentlemen were constantly there in conference. Aid in one way or another was arranged for and extended and brought to them. It was so varied in character and so incessant, pressing, that it is almost impossible to give a description of it. I never had an experience like that before, and I never expect to have another one."

"Did Mr. Morgan ever tire or ever quit?"

"Never. I tired. I remember the night I went home at five o'clock in the morning, I was done up. I went back at half past eight. I could not sleep a wink. I went home, went out and took a walk, had a cup of coffee, and went back, and found he was just as fresh as a daisy. He did not mind it at all.

"Mr. Morgan," continued Mr. Ledyard, "was recognized by all those gentlemen as the leader of the whole thing. He was the man that came to the rescue. Everybody from everywhere brought what they had to say to him."

make steel in the Birmingham district than in the Pittsburgh district, he said, due mainly to the availability of scrap in Pittsburgh.

Questioned by Judge Dickinson as to the future of the south, Mr. Crawford said that steel making could be developed into a reasonably good business proposition. There has been a rapid development in the south, but the consumption of iron and steel products is still limited.

Garfield on the Stand

James R. Garfield, commissioner of corporations in the Roosevelt administration, was the next witness. He stated that he began his investigation of the steel business when the bureau of corporations was organized. From then until 1905, he studied all available reports and documents, aided by William H. Baldwin, who had been a banker and officer of a steel company in Ohio. After having given three years to this preliminary work, Mr. Garfield conferred with officers of the Steel Corporation in 1905. Judge Gary gave orders that all the information requested by Mr. Garfield should be supplied to him. President Roosevelt was fully informed on the subject. Mr. Filbert furnished the information as directed by Judge Gary.

Mr. Garfield said he frequently made oral reports to the president regarding the progress of the work.

"State what report you made to him on the Steel Corporation as compared with what you reported to him regarding the Standard Oil Co."

"The report was to this effect: That I had not found a single sign of any of the conditions regarding rebates or competition that I had discovered when examining the Standard Oil Co."

Mr. Garfield said that he had inquired as to the standing of the Corporation with its competitors and had never heard any complaints. President Roosevelt consulted with him in regard to taking over the Tennessee company. "I told him," said Mr. Garfield, "that I did not know of any reason why he should not take the action, which he finally did take. The president asked me if the bureau had discovered any point in its investigation of the Steel Corporation which might bring about a report to the Department of Justice asking for the prosecution of the Steel Corporation and I told him I had not discovered any such point."

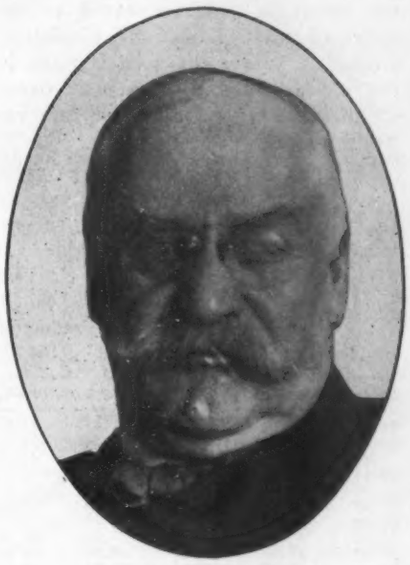
Mr. Garfield admitted that although he had heard that there existed a number of pools in the old days, he had not up to 1905 received any information that any of the subsidiaries of the Steel Corporation had had any connection with pools or price fixing organizations.

NEAR THEIR WORST

Are Conditions in Great Britain, it is Believed.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., June 21.

Pig Iron.—There are signs that things are approaching their worst in the iron trade, and an early improvement is looked for. The slump was complete this week. There were practically no sales on the Birmingham Exchange on Thursday. In the pig iron department, it is frankly admitted that orders have now run out, and that in all parts of the country, especially the Black Country, thousands of tons of iron have been put into stock. This is especially the case in South Staffordshire, where half the works are closed through the disastrous strike for the minimum wage. Cleveland has shown a little sign of recovery, but there was



LEWIS CASS LEDYARD

a relapse yesterday, bringing selling prices down to 54s 5d ($12.32) with 54s 9d ($13.40) one month and 55s 6d ($13.58) three months. The market is still under the influence of the recent heavy failure; but it is hoped that the worst has now been realized, and that the turn of the tide will soon be seen. Apart from lack of orders, the Midland district is suffering severely from the refusal of consumers to take deliveries on their contracts.

Finished Iron and Steel.—Business could hardly be worse in the Midlands. Practically no contracts were made at the weekly meeting of the Exchange. The persistence of the local strike, concentrating its worst effects on rolling stock and tubes, has dealt a severe blow to the Black Country iron trade. Some mills have been completely idle for the last six weeks, while certain iron works are shut down altogether. There is no sign of immediate resumption of work, and a recent conference having failed, both sides are preparing for a prolonged struggle which will now include 10,000 metal workers.

Naturally, prices are further depressed. For unmarked bars, sales have been on the basis of £8, but within the last week some transactions have gone 5s below this figure. Galvanized sheets are another weak line, with sales at £10 17s 6d f. o. b. Liverpool. The volume of business keeps up fairly well. One of the weakest departments is wire, which is sharing the dullness of America. The wide gap between unmarked and marked iron must force down the price of the latter very shortly. Marked bars are still quoted at £10 with unmarked £2, and more, below this figure. The market has been flooded with cheap Belgian iron, which can be bought for £6 5s for common material.

A singular feature of the market is the position of finished steel, which has maintained a firm price, through all the slump of the last month. It is now possible to buy finished steel from abroad at a little over £6 or at a less figure than a few months ago was demanded for billets. The Belgians and Germans are making sweeping reductions in steel.

Rail mills continue quite busy in all parts of the Kingdom, with very good inquiries coming along.

A reduction of South Yorkshire iron is expected to be made at the meeting of the Association this week. The tin plate trade continues very unsatisfactory, and such orders as are taken are at quite unprofitable prices. Scores of owners of mills are refusing business altogether at the present price of 13s 9d per box. It is stated that there is a fair amount of American demand for oil sizes, but at prices which leave no profit to the manufacturer.

The most depressing feature is the heavy fall in Continental prices, which always set the fashion for Great Britain.

Billet Rate Attacked

Washington, July 1.—The Standard Steel Co., Alabama City, Ala., successor to the Southern Iron & Steel Co., has filed a complaint against the Alabama Great Southern Railroad Co. and the Southern Railway Co. attacking the rate of 13 cents per 100 pounds charged the complainants on shipments of billets in 1911 from Alabama City to Knoxville, Tenn. The rate is attacked as being unjust and discriminatory.

Hearing Postponed

Washington, July 1.—Hearing in the fabrication-in-transit case, begun in this city recently and postponed, will be resumed in Cleveland on July 28.

COST OF PRODUCTION

Is Considered in Report of the Commissioner of Corporations.

Part three, of the report of the commissioner of corporations on the steel industry, deals with the cost of production. The average book cost of lake ore delivered at lower lake ports by ranges for five years, 1902 to 1906, is given as follows: Marquette, $2.62; Menominee, $2.93; Gogebic, $3.09; Vermillion, $3.20; Mesabi, $2.45. The average book cost of Bessemer pig iron by districts for the same period of five years is given as follows: Chicago and western, $14.81; Lake Erie, $13.08; Valley, $13.57; Pittsburgh, $13.68; Wheeling, $14.01; Eastern, $14.61. Bessemer ingots, Chicago, $18.78; Lake Erie, $17.57; Valley, $16.72; Pittsburgh, $17.37; Wheeling, $18.17. Bessemer billets, Chicago, $21.04; Lake Erie, $19.60; Valley, $20.42; Pittsburgh, $19.57; Wheeling, $20.93; Eastern, $21.77. Bessemer sheet bar, Chicago, $24.03; Valley, $24.03; Pittsburgh, $22.96; Wheeling, $27.66. Bessemer heavy rails, Chicago, $22.10; Lake Erie, $23.27; Valley, $20.92; Pittsburgh, $19.69; Eastern, $24.44. The average book cost of basic pig iron by districts for the same period is given as follows: Chicago and Western, $12.13; Valley, $12.68; Pittsburgh, $12.07; Wheeling, $13.74; Eastern, $12.51.

The average book cost of coke and certain iron and steel products are given as follows for five years, 1902 to 1906:

	1902.	1903.	1904.	1905.	1906.
*Coke	$1.44	$1.52	$1.34	$1.43	$1.42
Bessemer billet ingots	18.44	19.16	16.55	16.24	17.81
Southern pig iron	9.83	9.95	8.75	9.18	10.44
Plates	28.51	29.87	27.27	25.56	27.13
Shapes	25.90	29.69	23.36	25.11	27.41
Merchant steel bars	31.52	32.53	27.66	24.84	27.48
Hoops and light bands	36.10	34.45	29.15	28.10	30.70
Cotton ties	36.50	32.65	28.12	27.32	27.82
Wire rods	25.79	27.60	24.64	23.81	24.86
Coarse wire	32.30	31.41	28.02	27.21	28.11
Black sheets	44.75	45.79	35.79	35.65	37.87
Black tinning plate	54.03	52.87	46.64	45.79	47.37
Tin plate (box)	3.31	3.34	3.04	3.02	3.20

*Connellsville.

Mining Institute to Meet

The annual meeting of the Lake Superior Mining Institute will be held August 26-30 on the Mesabi range at places to be selected by local committees as most convenient during the trip.

A. J. Yungbluth, Ishpeming, Mich., secretary of the institute, is sending out notices of the meeting in which he asks that papers be prepared as soon as possible. The general committee at Duluth has arrangements well under way and further circulars will be issued giving the itinerary and the papers to be presented.

Since the last meeting, Williard Bayliss, Chisholm, Minn., E. D. McNeil, Virginia, Minn., and J. S. Lutes, Crosby, Minn., have been appointed by the president as a committee on "Mining Methods on the Mesabi Range."

In the announcement Mr. Lutes' address is given as Biwabik, where he was general superintendent of the Biwabik mine. He recently assumed charge of operations at the Pennington mine of the Tod-Stambaugh Co., Crosby, Minn., on the Cuyuna range, where stripping is now in progress.

COKE BREAKS RECORD

Production Last Year Greatest in History of Industry.

The coke industry in the United States has now reached, in good years, the $100,000,000 mark, and moreover there is a steadily growing increase in the proportion of coke made in by-product and retort ovens whereby the valuable by-products of gas, tar, ammonia, etc., are saved to the value of tens of millions of dollars annually. Where the coke is made in the old-fashioned beehive coke ovens all these valuable by-products are entirely wasted.

In 1912 the total production of coke, according to Edward W. Parker, of the United States geological survey, was 43,916,834 short tons, valued at $111,523,336, an increase of 8,365,345 tons in quantity and of $27,392,487 in value over 1911. In 1912 the production of beehive coke increased 5,164,701 tons, or 18 per cent, while that of the retort coke increased 3,200,644 tons, or 49 per cent. Although larger than in 1911, the output of beehive coke in 1912 did not reach the record figures for 1910, whereas the production of by-product coke in 1912 was by far the largest yet reached in any one year.

The accompanying table shows both the general increase in coke production in the United States and the rapid strides by which the by-product industry is over-taking the beehive production.

The progress in the construction of retort or by-product ovens as shown by these figures has been the most significant feature of the coke-making industry during the last few years.

The number of retort ovens in operation increased from 4,624 in 1911 to 5,061 in 1912, a gain of 437, whereas the total number of all ovens decreased from 103,879 to 102,080, indicating that there were 2,236 fewer beehive ovens in existence in 1912 than in 1911. Some new ovens of the beehive type were built in 1912, but the number abandoned exceeded the new ones by 1,799. There were nearly 1,000 more retort ovens under construction at the close of the year, and contracts had been made for the construction of a number of additional plants. The marked progress made in retort-oven construction in the last two or three years and the activity evinced in new work under way or in contemplation are carrying forward rapidly the revolution in coke making which was noted in one of the earlier survey reports as inevitable. This revolution consists not only in the gradual substitution of retort ovens for the wasteful beehive type, but in the shifting of the coke-making industry from the vicinity of the mines to the centers of manufacture and population, where the gases may be utilized and the other by-products readily disposed of.

PRODUCTION OF BY-PRODUCT COKE, COMPARED WITH THAT OF BEE-HIVE COKE, 1893-1912 IN SHORT TONS

Year.	By-product coke.	Beehive coke.	Total.
1893.....	12 850	9,464,730	9,477,580
1901.....	1,179,900	20,615,983	21,795,883
1907.....	5,607,899	35,171,665	40,779,564
1908.....	4,201,226	21 832,292	26,033,518
1909.....	6,254,644	33,060,421	39,315,065
1910.....	7,138,734	34,570,076	41,708,810
1911.....	7.847,845	27,703,644	35,551,489
1912.....	11,048,489	32,868,345	43,916,834

Iron Ore Production

The iron ore mined in the United States in 1912 amounted to 55,150,147 long tons, compared with 43,876,552 tons mined in 1911, an increase of 11,273,595 tons, or 25.69 per cent, according to an advance statement by Ernest F. Burchard, of the United States Geological Survey. The production for 1912 was second only to the output of 1910, falling 1,864,759 tons below the record production of that year, which was 57,014,906 long tons.

A petition in bankruptcy has been filed at New York City against the Pittsburgh Nail & Supply Co., of 949 Broadway, upon the application of the National City Bank, a creditor for $29,029. Samuel D. Elmore and Cortlandt Betts have been made receivers with a bond of $8,000. They are also receivers of the Kendall Nail & Supply Co., recently put in bankruptcy. George A. Enell, who died June 10, was president of both the Pittsburgh Nail & Supply Co. and the Kendall Nail & Supply Co.

COMMITTEE APPOINTED

To Arrange For Fall Meeting of Institute.

President E. J. Buffington, of the Illinois Steel Co., will act as chairman of the local committee on arrangements for the fall meeting of the American Iron & Steel Institute, to be held in Chicago, probably Oct. 24 and 25. Other members of the committee are M. Cochrane Armour, of Rogers, Brown & Co.; Eugene B. Clark, of the American Sintering Co.; Robert B. Lamont, of the American Steel Foundries; Cyrus H. McCormick, of the International Harvester Co.; Herbert F. Perkins, of the Wisconsin Steel Co., and L. E. Block, of the Inland Steel Co. The committee will act with the general committee of the institute upon arrangements, consisting of Jas. A. Farrell, E. A. S. Clarke, John A. Topping, Chas. M. Schwab and F. S. Witherbee. Dates for the meeting will be selected upon the recommendation of the local committee.

Some general discussion of the Chicago meeting was had at the monthly session of the directors of the institute at New York, June 27. At that time, 36 names were added to the membership roll, as follows:

Oliver J. Abell, western editor, Iron Age, 1507 Otis building, Chicago.

Thos. W. Allaway, Pittsburgh.

Florence C. Biggert, mechanical engineer, Pittsburgh.

De Courcey B. Browne, metallurgical engineer, 90 West street, New York City.

Thomas T. Bryen, mechanical engineer, Mesta Machine Co., Pittsburgh.

Frank Cordes, department manager, United Engineering & Foundry Co., Pittsburgh.

Frank I. Ellis, mechanical engineer, United Engineering & Foundry Co., Pittsburgh.

James B. Finley, president Colonial Steel Co., Pittsburgh.

Isaac W. Frank, president United Engineering & Foundry Co., Pittsburgh.

James J. Flannery, president American Vanadium Co., Pittsburgh.

Emil Gathmann, mechanical engineer, Baltimore, Md.

K. C. Gardner, United Engineering & Foundry Co., Pittsburgh.

Wm. Gardner, salesman, United Engineering & Foundry Co., Pittsburgh.

Henry G. Heedy, assistant secretary and treasurer, Andrews & Hitchcock Iron Co., Youngstown, O.

Paul H. Hubbard, assistant manager sales, Brier Hill Steel Co., Youngstown, O.

F. P. Huntley, vice president, Gould Coupler Co., New York City.

Robert Illingworth, Crucible Steel Co. of America, Newark, N. J.

Phillips Isham, 55 Liberty street, New York.

George F. Knapp, manager sales department, E. N. Breitung & Co., Cleveland, O.

Edward Kneeland, treasurer, United Engineering & Foundry Co., Pittsburgh.

Arthur G. McKee, consulting engineer, Cleveland.

John W. Meaker Jr., department sales manager, American Steel & Wire Co., Chicago.

William F. Meredith, president Titanium Alloy Mfg. Co., New York City.

A. F. Morris, sales manager, Morgan Engineering Co., Alliance, O.

Hal H. Peck, western sales agent, Scullin-Gallagher Iron & Steel Co., Seattle, Wash.

Chas. E. Satler, secretary United Engineering & Foundry Co., Pittsburgh.

Geo. S. Small, manager United Engineering & Foundry Co., Pittsburgh.

Frank J. Lanahan, president, Fort Pitt Malleable Iron Co., Pittsburgh.

W. E. Snyder, mechanical engineer, American Steel & Wire Co., Pittsburgh.

Wm. C. Sproul, president, Seaboard Steel Casting Co., Chester, Pa.

Robert W. Tener, United Engineering & Foundry Co., Pittsburgh, Pa.

Andrew Thompson, manager, Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

Jacob D. Waddell, general manager sales, Brier Hill Steel Co., Youngstown, O.

Wm. H. Walker, chemist, Massachusetts Institute of Technology, Boston.

L. A. Woodward, vice president and general manager, The William Tod Co., Youngstown, O.

Selwyn C. Edgar Jr., Edgar Zink Co., St. Louis.

OJIBWAY

New Town of the United States Steel Corporation Officially Born.

Ojibway, the youngest municipality in the Dominion of Canada and site of the planned big new plant of the United States Steel Corporation, on the Detroit river just below Sandwich, was officially born on Dominion Day, July 1, when it joined with the rest of Canada in celebrating the federation of the various provinces which make up the Dominion. What was once a cottage has been dignified with the title "Town Hall", and on Tuesday a big, new Union Jack was floated from a high pole in front of the "hall", rented from the Steel Corporation as the temporary seat of government. There Mayor Wollatt and the four councilmen held a public reception. A large number of visitors from Detroit as well as from Windsor, Walkerville and other Essex county towns participated in the celebration. Ojibway consists of 1,650 acres and the mayor extended the "freedom of the city" to the visitors. At its first meeting, the council will plan sewers and drainage and other improvements to include a fine harbor on the most modern lines. The population of the town is now about 1,500, mostly tillers of the soil.

Course in Aerodynamics

On the request of President R. C. MacLaurin, of the Massachusetts Institute of Technology, Secretary Daniels, of the Department of the Navy, has detailed Assistant Naval Constructor Jerome C. Hunsaker for work at the institute in developing courses in aerodynamics, the foundation of all kinds of work with the aeroplane.

PLANT ADDITIONS

Will be Made by Eastern Shipbuilders —Work Under Way.

As the result of the very heavy condition of business among the shipbuilders along the Delaware river, some important plans for the extensions of plants have been adopted and are now being advanced. The Wm. Cramp & Son Ship & Engine Building Co. is understood to have recently negotiated a loan in excess of $1,000,000 for increasing its plant. The New York Shipbuilding Co., at Camden, is preparing plans for the construction of what is said to be one of the largest dry docks on the Atlantic seaboard. Large expenditures have been made at the plant of the Harlan & Hollingsworth Corporation, at Wilmington, Del., and as reported, other important improvements are contemplated, which will enable this yard to build boats up to 500-foot length. Most of the larger plants have sufficient business on hand to keep them running full for one to two years from the present date.

The approaching completion of the Panama canal, which has given, as frequently noted, a great impulse to creating of new and extension of existing steamship lines, is largely responsible for the present prosperity of the industry. There are under construction and contracted for, 46 craft ranging from battleships and passenger and freight boats of large size to barges and car floats. A list of some of the ship work now under construction at eastern yards, is as follows:

Cramps—Seven United States torpedo-boat-destroyers, United States submarine G-4, United States gunboat Sacramento, three merchant steamers for W. R. Grace & Co., two steel steamers for Panama canal passenger service, ten United States coal barges.

New York Shipbuilding Co.—Single-screw collier for the Coastwise Transportation Co., steamship Congress for the Pacific Coast Steamship Co., launched May 17; freight steamer for the Old Dominion Company, three United States torpedo-boat destroyers, United States battleship Oklahoma, Argentine battleship Moreno, Chinese cruiser Fei Hung, six car floats, two ferryboats.

Harlan & Hollingsworth—Two passenger steamships for the Vermont Transportation Co., three steel ferryboats.

The Jackson & Sharpe and Pusey & Jones plants at Wilmington are engaged to their full capacity in the building of enormous harbor and pleasure craft.

TRADE NOTES

AURORA, ILL.—The Messenger & Parks Mfg. Co., manufacturer of sheet metal specialties, furnace pipe and supplies, has been enjoying an active business. This company was established 13 years ago by the late Frank C. Messenger and V. H. Parks. The present officers are V. H. Parks, president; James Harley, vice president and treasurer; C. H. Stolp, secretary.

AURORA, ILL. — The Stephens-Adamson Mfg. Co., manufacturer of conveying, screening and washing machinery, has increased its capital 25 per cent during the past year. An addition to the machine shop, 40 x 200 feet has been completed and new equipment installed. The officers of this company are W. W. Stephens, president; F. G. Adamson, treasurer; D. B. Pierson, first vice president; G. H. Stephens, second vice president; Frank H. McWethy, secretary.

BEAUMONT, TEX.—The Stone & Webster syndicate has taken over the franchise and holdings of the Beaumont Traction Co., which operates a street car line in this city. The Stone & Webster syndicate first came into this section four years ago when it built a street car line in Port Arthur. One year later it acquired the holding of the Beaumont Ice, Light & Refrigerating Co. which had the lighting franchise in the city of Beaumont. Last year it secured a charter for an interurban between this city and Port Arthur, which line is now practically half completed. This latest deal places the syndicate in control of both cities and the interurban line running between them.

BIRMINGHAM, ALA.—The chamber of commerce arranged a meeting of shippers and railroad men for July 2, at which all kinds of freight rates were discussed.

BOSTON.—Henry W. True has been appointed receiver for the Rex Motor Co.

CAMBRIDGE, MASS.—Frank H. Davis, dealer in paper mill machinery and steam engines, pumps and machine tools, whose plant is located on Richdale avenue, has been enjoying an active business, including export trade.

CHATTANOOGA, TENN.—The Citico Furnace Co., the Chattanooga Car & Foundry Co. and Armour & Co. have asked that the Dayton Coal & Iron Co., Ltd., be adjudged bankrupt.

CHICAGO.—The Aldrich Pump Department of the Allentown Rolling Mills, Allentown, Pa., manufacturer of Aldrich triplex and quintplex electric and power-driven pumps, has opened a branch office in the McCormick building, Chicago, and placed in charge W. N. Flickinger, who, for the past six years, has been general eastern representative. A strong increase in business from this section and a desire to facilitate business transaction prompts the company to open a Chicago office at this time.

DETROIT.—The Michigan Bolt & Nut Works advises that following the death of President E. Y. Swift, some changes have been made and the present executive officers are L. L. Barbour, president; F. S. Bigler, vice president and general manager; H. M. MacLean, secretary and treasurer.

FORT WAYNE, IND.—The Central foundry, owned by Wm. C. Walda, has been enjoying a steady increase in business since locating at its new plant on East Wayne street.

GALESBURG, ILL.—The Galesburg Malleable Castings Co. has sufficient orders on hand to tax its capacity until next July. This company was organized six years ago and has a capital of $100,000. The officers are Dyke Williams, president; Frank B. Stone, vice president; H. S. Peterson, secretary; H. W. Reeder, superintendent.

HAGERSTOWN, MD.—The New York Central Iron Works Co., for which receivers were appointed March 27, has been adjudged a bankrupt.

HAMILTON, O.—The Hooven, Owens & Rentschler foundry was partially wrecked last week when a flask conaining five tons of iron exploded.

HAMILTON, ONT. — The International Harvester Co., which usually closes down for two weeks during the summer, for stock-taking, will this year close for one month. The western demand has not been so good this season as usual.

HOUSTON, TEX.—The Bay Shore Iron Works has asked that a receiver be appointed to take charge of the affairs of the Commonwealth Oil Co.

MONTAGUE, MICH.—James D. Wilson, formerly president and general manager of the Montague Iron Works Co., and Martin Hausler of South Chicago, Ill., have taken over the interests of the Montague Iron Works Co. and will continue the business along the same lines as in the past.

MONTREAL.—The Dominion Bridge Co. has issued a statement for the six months ending April 30, reporting net earnings of $479,008. After paying $5,750 in bonuses, $326,499 in dividends and adding $102,400 to reserve funds, the company at the end of April carried forward a balance of $316,715.

MONTREAL.—Further details in regard to the $1,000,000 plant to be established on the shore of the St. Lawrence near Montreal show that it will be used solely for commercial or civil and mechanical engineering and not for military or naval work. No guns, boats or other armament will be made, but twist drills, punches, milling cutters, cranes, drop forgings, tool steel, etc., will be manufactured. British capital will finance the enterprise, no issue of stock being planned in Canada. M. J. Butler, who will manage the new concern, was formerly deputy minister of railways and canals. This position he resigned to accept the managership of the Dominion Steel Corporation.

NEW LONDON, CONN.—The plant of the Hopson & Chapin Co., manufacturer of heating systems and engine castings, has been closed permanently, the company going out of business.

NEW YORK CITY.—Negotiations are pending between the Central Railroad of New Jersey and the Jordan L. Mott estate for the purchase of the old Mott Iron Foundry property on the west side of Third avenue, between the Harlem river and 134th street. The railroad company desires this property to enable it to increase its freight terminal facilities.

NEW YORK CITY.—Schedules in bankruptcy filed against the Rockwell Furnace Co., 26 Cortlandt street, show liabilities of $182,182 and assets of $18,885. The value of additional assets, including patents, machinery, materials, drawings, etc., is stated to be unknown. Among the creditors are Henry Mehl, of Jersey City, for $86,449, the Trust Company of New Jersey, at Hoboken, for $23,000, and Theodore Schafer for $15,000.

NEW YORK CITY.—A petition in bankruptcy has been filed against the Pittsburgh Nail & Supply Co., 949 Broadway, upon the application of the National City Bank, creditor for $29,029. Samuel D. Elmore and Cortlandt Betts have been made receivers with a bond of $8,000. They are also receivers of the Kendall Nail & Supply Co., recently put in bankruptcy. George A. Enell, who died June 10, was president of both the Pittsburgh Nail & Supply Co. and the Kendall Nail & Supply Co.

NORTHAMPTON, MASS.—Harry P. Otis, receiver of the Northampton Emery Wheel Co., has petitioned the superior court for authority to sell the machinery in the plant in Leeds to W. H. Reece, of Florence, and the stock and materials in Chicago at private sale.

OKLAHOMA CITY, OKLA.—In the year ending June 30, 1913, the factory inspecting branch of the State Department of Labor inspected 2,192 institutions employing 27,433 persons. Five hundred and ninety-seven institutions were recommended to make 1,391 corrections in dangerous and defective machinery, sanitary conditions and employment of child labor. Of the various industries in the state, the largest number of persons are employed in the following occupations: Foundries and machine shops, 3,164, printing, 2,198, saw and planing mills, 1,871 and smelting 1,850.

OTTAWA.—The contract for the reconstruction of Rideau Hall, the official residence of the governor general, has been awarded to Peter Lyall & Sons, of Montreal, at $125,000.

OTTAWA.—The report of the royal commission on technical education, recently issued to the Canadian government, recommends courses of technical instruction for workmen, foremen and managers and technical schools co-ordinated with the industries rather than trade schools.

PHILADELPHIA.—The employes of the Charles Bond Co., 520 Arch street, machinery supplies, held their second annual outing on Saturday, June 21. Athletic events and a banquet in the evening afforded an enjoyable entertainment for the many employes, and heads of the departments.

PHILADELPHIA.—Suit has been brought in the United States District Court, by James B. Coryell, trustee in bankruptcy for J. K. Dimmick & Co., bankrupt iron merchants, against Isaac W. Seamans, J. P. Brennan, Charles E. Lenhart, A. P. Austin, R. W. Austin, E. W. Fry, Julien Kennedy, James H. Hoover, G. D. Harah, J. W. Abraham, E. H. Abraham, R. W. Gilmore, G. B. Gilmore, O. W. Fogg, W. G. Rock, Francis Rock, John Harding, George D. Howell, J. V. Thompson and Wiley L. Byer, no statements of claims were filed, merely the summons in trespass being issued. C. W. Van Artsdalen, W. H. Ramsey and Simpson & Brown appear as counsel for the plaintiff. It is believed that the suits are brought in furtherance of the administration of the bankrupt estate.

PORTLAND, ORE.—The Hesse-Martin Iron Works has enjoyed an especially large market in sawmill machinery and logging mill equipment during the past few months.

SEATTLE. — The Star Machinery Co., manufacturer of sawmill and logging

machinery, has reported that the month of May was one of the best in the history of its business.

SEATTLE. — The Stetson-Ross Machine Works has recently booked a large number of orders for planing mill equipment in all parts of the Pacific northwest on both sides of the boundary line.

SHARON, PA.—The Sharon Steel Hoop Co. has declared a regular quarterly dividend of 1¾ per cent, payable July 1 to holders of stock of record June 30. The plant is running at full capacity.

SHARON, PA.—Judge Williams, Sharon, has approved the sale of the Sharon Boiler Works by A. R. McGill, receiver. The National Malleable Castings Co. takes the real estate of the defunct company and the Knox Pressed & Welded Steel Co., the building and machinery with a five-year lease.

SPRINGFIELD, MASS.—The John Swaine Iron Works Co. has removed from 51-61 Taylor street to its new building at 34 Cyprus court.

SPRINGFIELD, MASS. — The Emerson Laboratory has moved from 177 State street to the New Chapin building, 145 Chestnut street.

ST. LOUIS.—The Cambria Steel Co. has been granted a license to do business in the state of Missouri and has established offices in the Chemical building.

TRENTON, N. J.—Upon the ground that they had violated the provisions of Section 35 of the corporation act, by serving as judge and inspector at the stockholders' meeting at which they were elected, Max F. Wirtz and Felix Oppenheimer have been disqualified by the New Jersey Supreme court from serving as directors of the Atlas Mineral & Machine Co., of Lincoln, Middlesex county, N. J. The election of directors was attacked by Edgar Grauert, Frederick W. DeVoe and Russell E. Watson, all of Middlesex county.

WALTHAM, MASS.—The Stark Tool Co., manufacturer of precision bench lathes, watch machinery and clock and chronometer makers' tools, celebrated its 50th anniversary not long ago. This company has the remarkable record of having operated its plant continually during that time without a single shut-down.

WASHINGTON, D. C.—Edwin W. Thompson, commercial agent, Marseilles, France, has suggested that American manufacturers of seed oil machinery would do well to arrange an exhibit for the French Colonial exhibition, to be held at Marseilles, in 1916.

YOUNGSTOWN, O. — Low water has caused several mills here to shut down.

YOUNGSTOWN, O. — The Youngstown Sheet & Tube Co. is planning to build a $300,000 brick office and club house at East Youngstown mills. The building will house all of the mill clerks and paymaster's forces.

YOUNGSTOWN, O.—The Republic Iron & Steel Co. has had to connect onto the 18-inch mains of the Mahoning Water Co., with a 16-inch line to furnish the Bessemer and Brown-Bonnell plants with enough water for boilers. Both plants get their water supply from the Mahoning river, which is now almost dry.

YOUNGSTOWN, O.—Officers and directors of the Brier Hill Coke Co., Youngstown, O., were re-elected last week at a meeting at the company's properties, Brier Hill, Pa. H. H. Stambaugh is president and R. C. Steese vice president. Directors are Mr. Stambaugh, Mr. Steese, John Tod, J. G. Butler Jr., and Thomas McCaffrey.

MEN OF THE IRON TRADE

W. E. COREY, formerly president of the United States Steel Corporation, sailed for France June 24 to spend the summer abroad.

JOHN TOD has been elected chairman of the board of directors of the Brier Hill Coke Co., a subsidiary of the Brier Hill Steel Co.

E. H. GARY, chairman of the United States Steel Corporation, who sails for Europe on July 2, will return in September on the Imperator.

E. C. ERWIN, well known St. Louis newspaperman and correspondent of The Iron Trade Review, has been elected president of the St. Louis Press club.

HON. LOUIS CODERRE, Canadian minister of mines, will make a western tour this summer, including the Yukon, to familiarize himself with mining conditions.

HOWARD I. SHEPHERD, Toledo, has resigned as treasurer of the Toledo Shipbuilding Co., to become vice president of the Ohio Savings Bank & Trust Co.

J. J. MALONEY has resigned as master mechanic at the Alabama city plant of the Standard Steel Co. to accept a similar position with Jones & Laughlin, at Woodlawn, Pa.

W. FITZPATRICK, of Melbourne, Australia, chairman of the Victoria State Railway Commission, who is touring America to investigate electrical railway systems, was in Montreal last week.

ALFRED J. JONES, of Montreal, has been appointed Canadian agent by Hick-Hargreaves & Co., Ltd., of Bolton, Eng., who have commenced the manufacture and sale of Diesel oil burning engines.

G. C. WADLOW, for six years connected with the American Steel Foundries, and lately with the purchasing department, has resigned his position to become assistant purchasing agent for the Chicago Pneumatic Tool Co.

J. G. SEYFRIED, assistant to the chief-engineer of the Grand Trunk railway, at Montreal, Que., has resigned to accept the position of engineer for the bridge department of the Canada Foundry Co., Ltd., Toronto, Ont.

GEORGE WHITING, of the George Whiting Co., 1701 Elston avenue, Chicago, was operated on for appendicitis on June 16. He is recovering from the effects of the operation and expects to be back in harness in two or three weeks.

E. T. CORKILL, chief inspector of mines for Ontario, has resigned that position to accept an appointment as safety engineer with the Canadian Copper Co., at Copper Cliff, Ont. This office is the first of its kind at any mine in Ontario.

W. E. JENKINSON has been appointed railroad representative for S. F. Bowser & Co., Inc., covering that territory vacated by E. F. G. Meisinger. In addition, Mr. Jenkinson will take over the southwestern and Pacific coast territory.

HENRY A. ROEMER resigned as assistant superintendent of the sheet mills of the Youngstown Sheet & Tube Co., Youngstown, to become superintendent of the Canton Sheet Steel Co., Canton, O., July 1. He has been succeeded by Fred Lawrence.

WILLIAM McINTOSH, veteran superintendent of the Carbon limestone quarries, Hillsville, Pa., is to resign August 1. He is to be succeeded by David Hamilton, mayor of East Youngstown, and now in charge of the Youngstown Concrete & Sand Co.

COLLINGWOOD B. BROWN, late of the Canadian Pacific railway, where he filled several engineering positions, has been appointed chief engineer of Canadian government railways. He was born at Kingston, Ont., about 36 years ago, and graduated in civil engineering at Cornell university.

PROF. HOWE, of the chair of engineering in Dalhousie university, Nova Scotia, has been appointed engineer for the grain commission in charge of the construction of terminal elevators in western Canada. He is a native of Waltham, Mass., and a graduate of Massachusetts Institute of Technology.

J. CLARK EVANS, secretary of the Fairmont Mining Machinery Co., Fairmont, W. Va., spoke on the "Uses of Steel Ties in Mining" at the summer meeting of the West Virginia Coal Mining Institute at Morgantown, W. Va., June 25. "The Qualifications of the General Manager from the Superintendent's Point of View" was the topic of an address by T. H. Huddy, general manager of Boomer Coal & Coke Co., Boomer, W. Va.

WILLIAM STANLEY, of Great Barrington, Mass., an electrical inventor and engineer, was made the recipient of the Edison medal on June 26, by the American Institute of Electrical Engineers in session at Cooperstown, N. Y. The medal which was conferred for meritorious achievement in electricity, represents the highest honor of its kind in the electrical industry of this country. Mr. Stanley has obtained fame through his work in connection with the alternating current system and for inventions connected with the electric lighting field.

GEORGE WESTINGHOUSE, head of the Westinghouse interests at Pittsburgh, was awarded the golden Grashoff medal by the Society of German Engineers at a recent meeting at Leipsig, Saxony. The medal was the fifth Mr. Westinghouse has received from foreign societies, including the decoration of the Legion of Honor from France; the Order of the Royal Crown from Italy; the Order of Leopold from Belgium, and the degree of doctor of engineering from the Koenigliche Hochschule, of Berlin, Germany. In this country, Mr. Westinghouse received the John Fritz medal in 1906, the Edison gold medal in 1911, and the Scott medal of the Franklin Institute in 1875.

GEORGE HOLLEY, Holley Brothers Co., Detroit, maker of the Holley carburetor, and Henry M. Leland, factory manager of the Cadillac Motor Car Co., are in Leipzig, Germany, attending the conference of mechanical and automobile engineers of the world. They will be abroad until the latter part of July, studying carburetors, motors and designs, and methods of manufacture in all the principal motor plants on the continent. Mr. Holley will tell conference members of the inception of the Holley "no moving parts" carburetor and of the plant where it is made. Mr. Leland, acting in an advisory capacity to his son, W. C. Leland, active manager of the Cadillac plant, is especially interested in foreign production methods and will continue investigations along this line after the official inspection party disperses.

NEW BUSINESS

The machinery market during the past week has, on the whole, been quiet, being practically devoid in both inquiries and orders of any size, yet fairly active in the way of single tools or small lots, second-hand machinery and machinery supplies. This about expresses the condition of the market during the past month, as well as what may be expected through July and August. While it is admitted that contraction in business at this season of the year is normal, the scarcity of orders extends beyond the usual quiet summer months. The inability of railroad companies to increase their incomes by a reasonable raising of rates is held to be responsible to a greater degree than any other single factor.

The hope is freely expressed by dealers that the proposed reinvestigation of the question by the Interstate Commerce Commission will result in favorable action towards the companies. If the increase is allowed there is little doubt felt that important buying would follow almost immediately.

In New York, the machinery trade is experiencing the lightest volume of buying that has prevailed during the first six months of the year. Houses that do a general supply business report that consumers have not shown so little interest in machinery since early last year, and they do not look for much, if any, improvement during July and August. Comparing the business done over the first six months of this year with the corresponding period of 1912, there is a good size balance in favor of the former. The outlook, however, is not so bright as it was a year ago. That fact detracts somewhat from the satisfaction over profits already made.

In Chicago, an absence of any large lists coupled with a fair run of small orders is the governing feature of the very dull market. Good crop reports and the gradual easing of the financial situation, however, are causing machinery dealers in this territory to take encouraging views of the future and to expect an excellent volume of business this fall. To that end some of the local sellers have stocked up quite heavily.

In Cleveland, little change is noted in the machinery market. A few new inquiries have come out, and some orders placed during the past week. There is a good aggregate of inquiries before the trade, which appeared several weeks ago, but there is yet no indication as to when any definite action will be taken. Second-hand machinery and machinery supplies continue in good demand.

In Cincinnati, the machinery market, especially that of machine tools, has not improved, and is still rather void of new orders. The statement made last week by several of the larger machine tool manufacturers that unless better conditions were realized shortly that they would be forced to curtail operations, has been verified in that the Lodge & Shipley Machine Tool Co., operating one of the largest plants in this city, will close down next week for several days.

ALABAMA

GADSDEN.—The A. & J. Mfg. Co., stove works, established in 1901, has started improvements to its plant which will provide 50 per cent increase in capacity. The new buildings include a molding room 75 x 80 feet; cleaning room 20 x 40 feet; cupola 20 x 40 feet; casting room 30 x 60 feet. The present capacity of the plant is 1,000 stoves per month.

OPP.—An oil mill to cost $30,000 is being planned by E. E. Kelly and Henry King.

ARKANSAS

LITTLE ROCK.—The Stuttgart Foundry & Machine Shops has been incorporated; $15,000; by J. P. Nichols, J. E. Brown, et al.

MARIETTE.—The Mariette Brass & Foundry Co., recently incorporated with a capital of $5,000, advises that it will do a general casting business in iron, brass, bronze and aluminum. The company will manufacture specialties in plumber supplies, and soil pipe fittings and may take up the production of automobile parts.

NEWPORT.—The Cow Lake Drainage District will receive bids July 7 for the construction of 12 bridges in connection with drainage work. Address Phillips, Hillhouse & Boyce.

PIGGOTT.—The Piggott Power Co. has been incorporated; $25,000; by G. W. Seitz, T. L. Davis and C. W. Pollard.

CALIFORNIA

SAN FRANCISCO.—The Union Iron Works has been awarded a contract by the Associated Oil Co. for an oil tank steamship with a carrying capacity of 62,000 barrels, which will probably be completed within a year.

SAN PEDRO.—The San Pedro Foundry & Machine Co. has recently booked a large number of orders for brass and other castings.

COLORADO

MEEKER.—An irrigation project to reclaim land in the Josephine basin in the White river valley, at a cost of $100,000, is being planned by a syndicate headed by H. E. Alesworth of Chicago.

CONNECTICUT

BRIDGEPORT.—Leonard Ashim, architect, has prepared plans for a factory building for The Frisbie Pin Co., to be erected on Kossuth street. The structure will be 50 x 100 feet, three stories.

NEW LONDON.—The D. E. Whiton Machine Co. has purchased a plot on Oak street, and will erect an additional building to its plant.

NEW LONDON.—The Interstate Machine Co. has been incorporated to manufacture engines, etc.; $50,000; by C. W. Leslie, Brookline, Mass., R. S. Stringer, New London and M. C. Armstrong, Norwich.

DELAWARE

WILMINGTON.—The California Steam & Plumbing Supply Co., Pittsburgh, was recently incorporated under the laws of Delaware with a capital of $100,000.

DISTRICT OF COLUMBIA

WASHINGTON.—Sealed proposals will be received at the office of O. Wenderoth, supervising architect, for the construction complete, including mechanical appliances of the United States post offices at the following places: Sistersville, W. Va., until Aug. 5, Chickasha, Okla., Xenia, O., until Aug. 4.

WASHINGTON.—Proposals for furnishing a 75-inch lathe, motor-driven, galvanized and

black chain, steel hoisting cable, rivets, nails, nuts, washers, chisels, files, etc., will be received at the office of the general purchasing agent, Isthmian canal commission, until July 17. Blanks and general information relating to these requirements (Circular No. 783) may be obtained from F. C. Boggs, Major Corp of Engineers, U. S. A., general purchasing officer.

WASHINGTON.—The following foreign trade opportunities are noted in the Daily Consular and Trade Reports. Inquiries in which addresses are submitted are on file at the bureau of foreign and domestic commerce. In applying for addresses refer to file number:

No. 11202. Agricultural machinery and implements, etc.—The Societe Royale d'Agriculture Hellenique, of Greece, at whose disposal an annual fund amounting to 1,000,000 francs ($193,000) has been placed to develop the national agriculture, desires the latest catalogs from the leading American manufacturers of agricultural machines and implements for farming on a large scale. Some of the principal articles for which particulars are desired at an early date are plows, harrows, binders, mowing and treshing machines, binders, and machines and implements for vine and tree culture, silkworm breeding, olive culture, motors, hydraulic machines, pumps, etc. The American consul who transmitted the request suggests that as tenders will be invited from other countries and payment in cash, it would be well to submit the most favorable terms.

No. 11213. Floating docks, cranes, etc.—Consul General John B. Jackson, of Bucharest, reports that the Roumanian government contemplates a further increase in the port facilities at Constanza, as well as the installation of cranes, etc., at several Danubian ports, the construction of a floating dock, to cost about 1,200,000 francs ($231,600), and various other improvements, representing an expenditure of about 2,000,000 francs ($386,000). Those interested should communicate, preferably in French, with the Ministry of Public Works, Bucharest.

FLORIDA

WEST PALM BEACH.—The George W. Fowler Co. has been incorporated to manufacture machinery with a capital stock of $250,000.

GEORGIA

ATLANTA.—The United States Lead Co., New York City, is reported to have completed arrangements for the erection of a $100,000 plant at East and Bishop streets, close to the Spalding foundry and Atlanta Steel Works. The main building will be 200 feet long. Construction work will probably begin at once under the direction of H. J. Carr & Co., contractors.

IDAHO

TWIN FALLS.—E. P. Knapp has established a foundry on East Main avenue for the manufacture of brass castings and will later equip the plant for the manufacture of iron castings. A machine shop will be added.

WALLACE.—The mill and property of the Hypotheek Mining & Milling Co. is to be increased in capacity and placed in commission soon, according to reports.

ILLINOIS

CHICAGO.—A permit has been granted to O. Perz, 9528 Ewing avenue, for the erection of a pattern shop at that location. It will be one story, 28 x 99 feet, to cost $3,000.

CHICAGO.—The Gray Automatic Gear Shift Co. has been incorporated with a capital of $1,000,000 to manufacture and deal in automobiles. The company may be addressed in care of Ed. E. Gray, 137 S. LaSalle street.

CHICAGO.—The George E. Mathis Co. has been incorporated with a capital of $10,000 to deal in heating and ventilating systems. The company may be addressed in care of George E. Mathis, 5541 LaSalle street.

CHICAGO.—The Keltz Mfg. Co. has been incorporated with a capital of $10,000 to manufacture dies, punches, machinery, etc. The company may be addressed in care of E. H. Heitmann, 38 S. Dearborn street.

CHICAGO.—The Ziv Steel & Wire Co. has been incorporated with a capital of $3,500 to transact a general jobbing and brokerage business in steel. This will constitute a continuance of the business of Aaron Ziv, who has offices at 180 N. Dearborn street.

CHICAGO.—The Wilson Steel Products Co., 4850 S. Western avenue, has taken out a permit for the erection of a one-story warehouse to cost $10,000, which will occupy the ground from 4830 to 4836 S. Western avenue.

CHICAGO.—The railway supply business of Fred Gardner, 80 E. Jackson boulevard, has been incorporated under the name of the Fred. Gardner Co. with a capital of $2,500 to buy, sell and deal in railway supplies. Besides Mr. Gardner, Chas. B. Moore and J. L. Nicholson are named as incorporators.

CHICAGO.—The Paltridge Metal Equipment Co., recently incorporated, with offices at 53 West Jackson boulevard, has taken out a permit for the erection of a factory building at 431-35 N. Fortieth avenue. It will be two stories, 50 x 120 feet, and cost $8,000. Joseph Zidek, 4021 W. North avenue, is architect.

EAST ST. LOUIS.—The General Chemical Co., N. A. Brunn, general manager, has purchased 90 acres surrounding its present plant and is having plans prepared for extensive additions.

ELGIN.—The city contemplates establishing a steam-electric power plant which will involve an expenditure of approximately $150,000. John S. Russell is commissioner of public works. A. C. & W. D. Chapman, Chicago, electrical engineers, are preparing a report on the project.

LA SALLE.—The Western Cloak Co. will erect a power house to cost $25,000 from private plans. It will be of brick, one story in height.

PEORIA.—Col. Dickinson and H. P. Finkelstein are promoting an enterprise for the erection of car works and car repair shop here.

ROCK ISLAND.—The Rock Island Bridge & Iron Works, which moved here from Des Moines, Ia., a year ago, has increased its capital from $30,000 to $50,000 and elected Walter A. Rosenfield treasurer and general manager. The company has orders for a year ahead, aggregating $100,000.

SANDWICH.—The Enterprise Wind Mill Co. advises it has sold its plant and wind mill, tower, tank and corn slicer business to the Sandwich Mfg. Co. D. A. Hinman & Co., Sandwich, has taken the float valve, flush valve, horizontal check valve, ratchet die stock and pipe vise business, including patents, stocks and patterns.

STREATOR.—A two-story building, 40 x 130 feet, is being erected at La Rue street and the Santa Fe tracks, for the Automatic Sewing Machine Co., of Elgin, Ill.

INDIANA

BOONVILLE.—N. M. Spradley, auditor of Warrick county, will open bids July 9 for the construction of 43 bridges, complete plans for which are on file at his office.

CULVER. — The Noelke-Richards Iron Works, of Indianapolis, has received the contract for the structural stel to be used in the construction of an administration and barracks building for the Culver Military School.

ELWOOD.—The Elwood Iron Works Co. has issued $100,000 preferred stock.

FT. WAYNE.—The Eagle Mfg. Co. has been incorporated; auto plows and machinery; $50,000; by H. F. Schnelker, W. J. Barth, F. Kreibaum, D. F. Green and C. E. Orff.

INDIANAPOLIS. — J. B. Maxwell, automobile manufacturer, and associates, have completed negotiations for the purchase of the T. B. Laylock manufacturing interests at this place.

INDIANAPOLIS.—Work will begin immediately on the new addition to the factory of the Cole Motor Car Co., which will cost $175,000. It will be of brick and reinforced concrete, four stories, about 60 x 100 feet. The Bedford Stone & Construction Co. is contractor.

INDIANAPOLIS.—The Christie Machine Works, 371 S. Meridian street, advises it proposes to do a general line of machine shop work, making motor plows and damper opening and closing devices. The company will continue using an established shop and is not in the market for machinery.

INDIANAPOLIS. — The Crawford Locomotive & Power Co., of Streator, Ill., has opened offices at 1609 Merchants' Bank building, preparatory to starting work on its new plant at Mars Hill. S. E. J. Cox is in charge of this office. Plans for the new plant are going forward and actual construction work will probably begin before long. The main building will be 200 x 1,500 feet and will be used for the manufacture of steel cars. The second building will be 150 x 1,000 feet and will be used for the re-construction and building of wooden freight cars. The company has its plans perfected for the railroad track layout involving about 25 miles of track.

LOGANSPORT.—The Rutenber Motor Co., manufacturer of gasoline motors and iron, brass and aluminum castings, advises that reports of contemplated enlargements are unfounded.

MUNCIE.—The Moon Machine Co., recently incorporated with a capital of $50,000; to take over the plant of the Moon Bros. Co., doing a general machine and foundry business, will also manufacture automobile engines. Improvements to the plant at Hackley street and the C. & O. railroad tracks will include a new office building and an additional manufacturing building. The directors of the new company are W. H. Moon, C. R. Moon, O. P. Perkins, Clyde E. Whitehill and Herbert R. Bard.

IOWA

CARLSON.—The council has been authorized to construct a water-works system at a cost of $15,000.

ELDORA.—At a recent election the citizens

voted to build a steel bridge across the Iowa river at Edgington avenue, at a cost of approximately $3,500.

FONTANELLE.—The town will purchase electricity from Greenfield, Ia., and will build a seven-mile transmission line. J. B. Hill, consulting engineer, Iowa City, Ia., has been retained to prepare plans and specifications for the transmission line and overhead distribution system. Bids will be entertained to furnish and install all material complete.

PRESTON.—The town has entered into a contract to purchase electricity, and will build its own overhead distribution system, plans and specifications for which are about complete. Bids will soon be entertained for all material installed complete. J. B. Hill, Iowa City, Ia., is consulting engineer.

KANSAS

KANSAS CITY.—The Kansas City, Kaw Valley & Western Railway Co. has secured the right-of-way for its line from Bonner Springs to Kansas City.

WICHITA.—The Tuttle Mfg. Co. contemplates building a plant to cost $100,000.

KENTUCKY

LEXINGTON.—The Kentucky Utilities Co., controlling about 20 electric plants in Kentucky, will probably enlarge its Middlesboro and Pineville plants, for the purpose of furnishing current for the use of the mines in that section, contracts having been made with several operators.

LOUISVILLE.—The Maguire & Comstock Machine Co., which will specialize in electric elevators, manufacturing and repairing, will probably require some additional machinery. The company is using the equipment of Maguire & Comstock's machine shop, 117 N. Fourth street.

LOUISIANA

MANDEVILLE.—The Poitevant & Favre Lumber Co., New Orleans, is planning to spend $250,000 in the erection of a new lumber mill here with a daily capacity of 100,000 feet. Bids for the machinery were opened July 1.

NEW ORLEANS.—The Texas & Pacific railroad has completed arrangements for financing the $10,000,000 terminal project in New Orleans, according to reports.

MAINE

BANGOR.—The Bangor Power Co. has resumed work on its dam at Veazie, four miles above Bangor.

MASSACHUSETTS

BOSTON.—Harry Butler has taken out a permit to build a brick metal refining plant at 151 Mount Vernon street, Dorchester.

NEW BEDFORD.—The Morse Twist Drill & Machine Co. plans building an addition on land recently purchased. Plans call for a five story building 375 feet long.

SOMERSET.—The old plant of the Mt. Hope Iron Works is to be razed for salvage by W. J. Dunn. The plant was erected in 1853 as the Somerset Iron Works and has since been added to considerably. It ceased activities after 1909.

SPRINGFIELD.—The Hendee Mfg. Co. has been granted a permit for the erection of another factory building to cost $100,000. The building will be 50 x 250 feet, five stories, with two wings, each 44 x 70 feet, five stories.

SPRINGFIELD.—The Harley Co., makers of high grade aluminum brass, bronze, copper and composition castings, advises the building it is erecting will be used in addition to its general business. Equipment has been bought.

WALTHAM.—The Waltham Machine Works, manufacturer of automatic watch and clock machinery, precision bench lathes, punches, dies and specially designed machinery, has received an order for a number of automatic pinion cutters. During the past six months, the plant has been working practically its entire force in the production of automatic thread milling machines.

MICHIGAN

ALMA.—The Alma Motor Truck Co. has been incorporated with an authorized capitalization of $50,000, half of which has been subscribed and $5,000 paid in cash.

BAY CITY.—Superintendent Dunbar, of the water-works system, is taking bids for a new high duty pump of 5,000,000 gallons capacity. The estimated cost is between $13,000 and $16,000.

BENTON HARBOR.—At a recent election, a bond issue of $100,000 was approved for water-works extensions.

CADILLAC.—The Mitchell-Diggins Iron Co. has planned to resume operation of its furnace about July 13, and it is probable that the three chemical plants of Cadillac and Jennings will start up on or before that date.

DETROIT.—The Hupp Motor Car Co. has applied for an increase in capital from $750,000 to $1,000,000. This increase is to be made by stock dividend taken out of the surplus and added to the capital stock.

TECUMSEH.—Heeson Brothers & Co. have merged their business into a stock company under the same name to operate and conduct a general foundry and manufacture all kindred goods pertaining to iron. The authorized capital is $30,000 common and $15,000 preferred stock, all subscribed and paid in. The company's plant and equipment is placed at $43,000.

MINNESOTA

DULUTH.—The Great Northern Power Co. increased its capital with the intention of expanding to reach over the iron range. The company's plant is at Carleton, Minn.

MINNEAPOLIS.—The city of Minneapolis contemplates an enlargement of its filtration plant at a cost of $560,000.

MINNEAPOLIS.—Two permits, granted to the St. Paul, Minneapolis & Omaha railway, provide for the erection of an engine house and coal chute to cost $1,200 on the river bank between 16th and 17th avenues, north, and a one-story brick pump house to cost $2,700 on the river between 23d and 24th avenuts, north.

MINNEAPOLIS.—The Minneapolis, St. Paul & Sault Ste. Marie Railway Co. has taken out a permit for the erection of a three-story brick and re-inforced concrete storage shed and two iron-clad unloading sheds, to cost $78,795. A second permit granted to the company provided for the erection of a two-story brick and steel battery house to cost $7,600.

ST. PAUL.—Brown & Bigelow, Drake building, have let contracts for the erection of their new factory buildings at University and Hamline avenues, which will cost in the neighborhood of $350,000. The buildings included are as follows: One story, 92 x 254 feet; three stories, 68 x 425 feet; three stories, 68 x 108 feet, and three stories, 68 x 178 feet. All are of brick, fire proof construction. The general contract has been let to August Cedarstrand, 984 Central avenue. Kees & Colburn, Laury Annex, are architects, and the C. L. Pillsbury Co., Capital Bank building, is consulting engineer.

MISSISSIPPI

TUPELO.—Commissioners of Lee county will receive bids July 9 for the construction of a steel bridge near Tupelo.

MISSOURI

ELLSINORE.—A charcoal blast furnace is to be erected near here, the contract being let and work scheduled to begin early in August. The plant will have a capacity of approximately 100 tons of ore per day, and will be provided with facilities for burning its own charcoal. The building of the plant will be under the supervision of L. W. Searle of Birmingham, Ala.

KIRKSVILLE.—The foundry owned by W. L. Sherwood is to have its capacity doubled by the erection of a new buildirg.

MONTANA

BILLINGS.—The voters have authorized bonds to the amount of $575,000 for a municipal water system. Plans are being prepared by Burns & McDonald, of Kansas City, Kan.

LIBBY.—Officials of Montana Pulp & Paper Co. say $1,500,000 plant will be built here if company obtains 700,000,000 feet of timber now advertised by government in forest reserve.

LIVINGSTON.—Bonds to the amount of $225,000 have been voted by the people to purchase present private water system and to enlarge with building of new plant. Burns & McDonald, Kansas City, Kan., are preparing the plans.

NEW HAMPSHIRE

CLAREMONT.—The Sullivan Machinery Co. is erecting an addition to its plant 63 x 362 feet, two and five stories.

NEW JERSEY

CAMDEN.—A large addition will be made to the plant of the Victor Talking Machine Co., at Camden.

CAMDEN.—The Atlantic Construction & Supply Co., Atlantic City, submitted the lowest bid on the municipal lighting pilant. The company proposed to do the entire work for $413,000, provided that the wires are not to be laid underground.

NEWARK.—Lewis Sachs has taken out a permit to build a foundry at Hamburg Place and the Jersey Central railroad, to cost $18,000.

ORANGE.—The Edison Storage Battery Co., now erecting extensions to its plant for manufacturing storage batteries, have placed through the New York office of the

Quigley Furnace & Foundry Co., Springfield, Mass., one of the contracts for 59 Quigley patent overfired accurate temperature furnaces, burning oil fuel.

TRENTON.—The Elmer E. Sutphin Machine Co. is busy turning out a large order of dies for the various porcelain plants of this city. The company recently completed a die weighing 1,036 pounds to be used on a double-pressure press at the Imperial Porcelain plant. The Sutphin company is also making many molds for the various Trenton companies.

TRENTON.—The city of Trenton has begun work on its new filtration plant, which will be located along the banks of the Delaware river adjoining the city pumping station. The plant will be erected by Rogers Brothers, contractors, of Moorestown, N. J., at a cost of $400,000. It will be equipped with a Roberts mechanical filter, with a capacity of 30,000,000 gallons daily. The plant will be completed in about two years.

NEW MEXICO

ALBUQUERQUE.—The Santa Fe railroad will start work within a few weeks on extensions to its railroad shops in Albuquerque, which, when completed, will be the second largest on the system.

NEW YORK

BATAVIA.—The Johnston Harvester Co., Batavia, is installing for its new gray iron core room a battery of four units of reel type core ovens, made by the Quigley Furnace & Foundry Co., Springfield, Mass.

BUFFALO.—The United States Hame Co., 135 Tonawanda street, is erecting a foundry as an addition to its plant. Estimated cost, $15,000.

BUFFALO.—The Chicago Bridge & Iron Works Co. has practically completed its new plant here and expects to start operations soon.

BUFFALO. — Extensive improvements to the McCue Co.'s plant, makers of automobile parts, are under consideration. The company proposes to add to its machine shop and drop forge buildings at Elmwood avenue and Grate street.

BUFFALO.—J. H. Williams & Co., Brooklyn, manufacturers of drop forgings, who have just awarded the contract for the construction of a large new plant at Tonawanda, N. Y., advise that they have much of the new equipment requirements yet to be purchased. The company has decided not to place contracts for this equipment until early in 1914, after the buildings have been roofed. Machinery requirements will consist of hammers, presses, shears, drill presses and small machine tools of various kinds. It is probable that the Niagara Falls power will be used, though the power house is arranged that equipment can easily be installed for private generation.

DUNKIRK.—The Commercial Machinery Co., Inc., has been incorporated to manufacture machinery, tools, etc.; $5,000; by G. H. Gardiner, Westfield, N. Y., and W. B. Gardiner and B. B. Gardiner, both of Erie, Pa.

GREEN ISLAND.—The Shechan Felt Press Roll Co. has been incorporated to manufacture felt press rolls and paper-making machinery; $100,000; by W. F. Shechan, Albany; A. H. Bogan, Jersey City, N. J.; E. V. Boyle, Cohoes, N. Y.; W. S. Crandell, Greenwich.

LONG ISLAND CITY.—The Neptune Meter Co. will construct two additional buildings, one 75 x 175, five stories, on Crane street, to be used as a machine shop, and the other 100 x 200 feet, two stories, on Davis street, to be used as a foundry.

MT. VERNON.—The Jaeger Rotary Valve Motor Co., Inc., has been incorporated; $40,000; by M. Jaeger, 125 North Terrace avenue, J. Norden, 15 South High street, and W. Cronenberg, 54 Mt. Vernon avenue, all of Mt. Vernon.

NEW YORK CITY.—The Iron Specialty Co., Inc., has been incorporated; $1,000; by S. Horowitz, 1376 Boston road, C. Milikow, 166 East 114th street and L. Lipskin, 299 Broadway, all of New York City.

NEW YORK CITY.—The Continental Smelting & Refining Co., Ins., has been incorporated to smelt and refine metals, etc.; $10,000; by L. May, F. M. May and A. H. Jonas, all of Schenectady, N. Y.

NEW YORK CITY.—The Fenmore Iron Works, Inc., has been incorporated; $10,000; by A. Weiss, 687 East 138th street, and A. Weiss and H. Weiss, both of 683 East 138th street, all of New York City.

NEW YORK CITY.—George Allen & Son, 1245 Park avenue, New York City, have taken a contract to rebuild the boiler and economizer settings at the power station of the West Shore railroad in Weehaken, N. J.

NEW YORK CITY.—The Metalock Mfg. Co., Inc., has been incorporated to manufacture metal locks and tags, etc.; $75,000; by H. Hartmann, 249 Lindin street, Geo. Trebing and K. Trebing, both of 251 Lindin street, all of Brooklyn.

NEW YORK CITY.—The American Expansion Bolt Co., Inc., has been incorporated to manufacture and deal in expansion shields, bolts, etc.; $5,000; by P. M. Gomberg, G. Gomberg, and L. Joseph, all of 25 West Forty-second street, New York City.

NEW YORK CITY.—The Iridium Steel Co., Inc., has been incorporated; $500,000; by J. Becker, Dusseldorf, Germany, A. Becker, 61 Jackson street, Staten Island, N. Y., and W. Peters, the Alcazar Apartments, New York City.

NEW YORK CITY.—F. L. Schmidt & Co., engineers and designers of machinery, Eleventh avenue and Twenty-first street, will erect a new machine shop in Elizabeth, N. J. The new building will be partly equipped with machinery to be removed from the company's plant in Jersey City, which will be abandoned.

NEW YORK CITY.—The Standard Oil Cloth Co., 320 Broadway, has had plans prepared for a factory building, which will be erected at Buchanan, N. Y. The building will be one and two stories, 696 x 1,900 feet. Plans were made by E. A. & H. Lansing and when fully equipped it is estimated that it will require the expenditure of $600,000.

NEW YORK CITY. — Local machinery dealers have been informed that the plant of the Babcock Mfg. Co., Leonardsville, N. Y., which was destroyed by fire a short time ago, will be rebult this summer. Requests for machinery catalogs, have been sent out with the intimation that bids on a complete line of metal working equipment will be asked toward the end of July. The company's requirement includes lathes, planers, millers, drill presses, shapers, punching presses, keyseaters, shearers, bulldozers, boring machines, shearing presses, a cylinder planer, band-saw, dynamos, and electric motors.

SYRACUSE.—The Warren Steel Co., Inc., has been incorporated; $5,000; by E. T. Mallery, A. B. Haley and H. T. Strout, all of Syracuse.

SYRACUSE.—The Syracuse Lighting Co. has announced that $100,000 will be spent in carrying out its plans for extending and improving its plant.

NORTH CAROLINA

ASHEVILLE.—The Asheville Supply & Foundry Co. has started work on two buildings as additions to its plant. One building will be four stories and used for offices and the other building will be three stories, for machinery.

OHIO

AKRON.—The Warwick Machine Co. has been incorporated; $6,500; by F. A. Owen, B. Frederick, T. J. Owen, A. H. Wagoner, M. Burg, J. German and C. Baker, all of Akron.

AKRON.—The new buildings of the Firestone Rubber Co., which will increase its capacity 50 per cent, are well under way. The capacity of the power plant will be doubled.

AKRON.—Stockholders of the Miller Rubber Co. have decided to increase the capital from $1,000,000 to $2,000,000. The company has just completed buildings and is now installing new machinery. W. F. Pfeiffer, secretary and general manager.

ASHTABULA.—Bids for the steel superstructure of a bridge over the Grand river in Northern township will be opened July 17 by A. V. Hillyer, clerk, board of commissioners, Ashtabula county.

CANTON.—E. A. Langabach, president of the Berger Co., has announced that the new plant of the General Stamping Co., a subsidiary, will be ready for operation in October. The new plant is being erected on a site adjoining the Berger works, at a cost of $1,000,000. The main building will be 400 x 600 feet, while the entire plant will cover several acres.

CINCINNATI.—The H. L. Brown Fence & Mfg. Co., Cincinnati, has increased its capital stock from $15,000 to $50,000, to take care of increasing business.

CINCINNATI. — The Commercial Motor Car Co. has been incorporated; $50,000; by W. G. Vessler, H. A. Hoelscher, E. H. Hoelscher, W. C. Hoelscher and Geo. Schorr.

CINCINNATI.—Klein & Cohn, scrap iron dealers of Cincinnati, have practically closed a deal for their former plant, which is on Wade street between Baymiller and Linn, that city. The firm is at present located at 731 Reading road, Cincinnati.

CINCINNATI.—The contract for about 8,000 square feet of steel sash to be used in the Lippincott building, now being erected on Main street, Cincinnati, has been secured by the Detroit Steel Products Co. The contract was let through Architects Stegner, Hughes & Alves, who have charge of the construction of the building.

CINCINNATI. — The American Laundry Machinery Co. advises that it is now building an addition to its plant in Norwood, which will be of re-inforced concrete and brick. The first floor will contain 20,578 square feet, the second 23,892 square feet and the third 11,466 square feet, making a total of 55,876 square feet. The first and second floors will be given to manufacturing and storage purposes, and the third floor will be used for offices and show room. The addition was designed by Architect Charles C. Taylor.

CINCINNATI.—The Ohio Knife Co., Cincinnati, advises that its new plant which it is erecting at Dreman street and the C., H. &

D. railroad, will be finished about next September or October. When completed the company will have three times the capacity of its present plant, now located at Ninth street and McLean avenue.

CINCINNATI.—The Hess Spring & Axle Co., Carthage, Cincinnati, advises that it has increased its capital stock from $100,000 to $350,000, because of the increasing volume of business, especially in its automobile axle and spring lines. The increase may be used in enlarging the automobile axle business, which eventually will mean additional buildings and equipment.

CINCINNATI.—The new office building to be erected on the site of the old St. Nicholas hotel at Fourth and Race streets, Cincinnati, is now practically assured. Architect G. W. Drach, of that city, has been working on plans and S. D. Peacock, who is promoting the enterprise, has practically arranged for the sale of $200,000 of common stock at par. The option on the realty is $410,000. The cost of the building is not known as yet, as it has not been definitely decided as to just what kind will be erected.

CINCINNATI.—The plans and specifications for the new office building of the Proctor & Gamble Co., Cincinnati, which is to be erected on the northwest corner of Eighth and Race streets, that city, are about ready and will be posted within a day or so. Bids will be asked at once on the construction of the building, which will be 12 stories, re-inforced concrete. About 200 tons of re-inforcing bars will be required. When completed the building will be the second tallest concrete structure in this section of the country and will cost in the neighborhood of $750,000.

CINCINNATI.—The C. L. Hils Co. has added a large new shear to its iron yard equipment that will greatly facilitate it in handling heavy scrap materials. The shear has a capacity of cutting 3-inch steel and will be used to cut boiler iron, I-beams, railroad rails, etc. Its weight is 26,000 pounds and a crane is also being erected which will be used to convey the materials to the shear. This company has also purchased an oxy-acetylene machine for cutting up boilers, shafting, etc., which will enable it to handle materials of any size. Two shears of 2½-inch capacity have previously been added to the company's yards for lighter work.

CLEVELAND.—The Power & Light Building Co. has increased its capital stock from $250,000 to $500,000.

CLEVELAND.—Bids for the construction of bridges will be opened as follows: July 14, Canton; July 22, Marietta; July 28, New Philadelphia.

CLEVELAND.—The F. B. Stearns Co. recently doubled its capital stock, bringing the total up to $400,000. The company has purchased land adjoining its plant on Euclid avenue.

CLEVELAND.—Bids will be received by W. J. Springborn, director of public service, until July 8 for feed water heater, structural steel work and three steam turbine-driven centrifugal pumps for the Fairmount pumping station.

FINDLAY.—The S. & M. Tire & Rubber Co. is installing machinery in its new plant and expects to start operations in September.

LIMA.—The Lima Tool & Supply Co. advises it has been incorporated to take over the business of the Lima Supply Co. It will do a general jobbing business in factory and mill supplies.

MT. GILEAD.—J. H. Kelly is planning to erect an iron foundry adjoining his present plant, to be ready for occupancy by Jan. 1.

MT. MORRIS.—Bids for a $100,000 water bond issue have been submitted to the village clerk.

NEWARK.—The Pharis Tire & Rubber Co., Columbus, recently incorporated for $25,000, and later doubling its capitalization, has reached an agreement with the Newark Board of Trade, which calls for the erection of a plant in this city which will require an expenditure of $30,000 in machinery alone.

SPRINGFIELD.—The Fairbanks Co. has increased its capital from $160,000 to $260,000, to meet the needs of the rapidly increasing business. The Fairbanks Co. makes engine lathes, lathe and planer tools, gray iron castings and piano plates.

SPRINGFIELD. — The Gramont Tractor Plow Co. will be incorporated under the laws of Ohio in the near future, with a capital of $600,000. The company will build a tractor plow, which will be operated by a gasoline engine as a part of the plow instead of being drawn by an engine. Recent tests have proven that the invention has passed the experimental stage and is an assured success. The company will purchase a site and erect its plant in this city. The stock issue will be handled by R. L. Dollings & Co., of Cincinnati.

TIFFIN.—The Loomis Machine Co. has been incorporated; $150,000; by G. D. Loomis, B. Z. Good, W. L. Hertzer, E. B. Naylor and D. L. Mott.

TOLEDO.—The Toledo Flanner Boiler Co. has changed its name to the Toledo Boiler & Tank Co.

TOLEDO.—The Ohio Die & Tool Co. has been incorporated; $10,000; by M. E. Snell, D. E. McKisson, R. W. McKisson and S. A. Snell.

TOLEDO.—The Watson Mfg. Co. has been incorporated to do a general machine and manufacturing business; $20,000; by C. W. Watson, W. A. Miller, J. W. Miller, L. F. Metzger and E. Rheinfrank.

TROY.—Proposals will be received until July 14 for the purchase of bridge bonds aggregating $80,000.

YORKVILLE.—The new tin mill at this place is nearing completion and some of the machinery is being installed at the present time. The plant will probably be placed in operation by the middle of August.

YOUNGSTOWN.—The old Forsythe Pattern Works building on Andrews avenue, occupied by the Youngstown Furnace Co. and the General Refrigerating Co., was badly damaged by fire recently.

YOUNGSTOWN. — The Youngstown Foundry & Machine Co. has purchased a 16-foot Niles-Bement-Pond boring mill, which is now being installed in the company's new machine shop. This will enable the company to handle larger work than formerly, particularly blast furnace work.

ZANESVILLE.—The Weidig Foundry Co., recently organized, will take over the business of Weidig & Co., formerly in Putnam, whose plant was damaged by the floods.

OKLAHOMA

CHICKASHA.—The Chicago, Rock Island & Pacific Railway Co. is installing new equipment in its machine shops here.

OKLAHOMA CITY.—The J. B. Klein Iron & Foundry Co. advises the building it is completing will be used for making structural and commercial iron work, including wire and brass fixtures. An air compressor and air tools will be required.

TULSA.—The Public Service Co. of Oklahoma, recently incorporated with a capital of $3,000,000, has purchased the properties of the Tulsa corporations. The new company now owns the properties of the light and power concerns of the Tulsa, Guthrie, Vinita, Atoka, Lehigh, Coalgate and Chickasha. Fred Insull is president of the Public Service Co.

OREGON

PORTLAND. — The Northwestern Equipment Co. has recently booked a large number of orders for logging trucks.

PORTLAND.—The Willamette Iron & Steel Works recently completed two 7 x 136-foot creosoting retorts with necessary storage tanks, etc., for the Henels Creosoting Co., St. Helens, Ore.

PENNSYLVANIA

JOHNSTOWN.—The Sheesley & Jannay Construction Co. has been incorporated; $25,000; by M. M. Sheesley, Fred K. Sheesley, and A. D. P. Jannay.

PHILADELPHIA.—The United Electric Construction Co. has obtained the contract for the electrical equipment in the dispensary building of the American Vicose Co., at Marcus Hook, Pa.

PHILADELPHIA.—The Pennsylvania Railroad Co. has awarded the contract for the construction of a car repair shop, 120 x 700 feet, one story, at the Meadow shops near Newark, to Charles Gilpin at $65,000.

PHILADELPHIA. — The Philadelphia & Reading railroad will add a 120-ton crane to its erecting equipment on the Schuylkill Valley division. The former 100-ton crane will be used on the Harrisburg division.

PHILADELPHIA.—Allaway, Martin & Co. are about to start work on the enlargement of their plant on Filbert street. The plans and specifications have been completed by Peukert & Wunder, and bids are being received.

PITTSBURGH.—The General Electric Co. has taken an order for a 1,000-kilowatt low pressure turbine direct connected to a General Electric direct current generator, to be installed in the plant of the Allegheny Steel Co. at Brackenridge, Pa. The Allegheny company placed a contract with the Westinghouse Electric & Mfg. Co. for the condensing outfit to be used with the generator sets.

POTTSTOWN.—The plant of the Ideal Brass Mfg. Co., Pottstown, which has been idle for several months, has resumed operations.

POTTSVILLE.—The Eastern Steel Co. has been awarded 200 tons of fabricated steel for a new train shed for the Pennsylvania railroad at Pottsville.

YORK.—The York Mfg. Co. has made a large number of installations of refrigerating machinery during the past few weeks, including three 90-ton machines for the Standard-Waygood Co., Ltd., Sydney, N. S. W., Australia.

SOUTH CAROLINA

DALLAS.—The Piedmont Metal Roofing Co. advises that it has purchased the plant of the Clemmer Metallic Shingle Co. and will make metal shingles, ridging and valley. The company desires to get in touch with jobbers handling galvanized sheets and tin used in metal shingles. The officers of the new company are H. M. Clemmer, president; G. W. Detter, vice president; P. D. Summey, secretary and treasurer; M. L. Cornwall, assistant secretary and treasurer; H. M. Clemmer, general manager.

GREENVILLE. — The machine shop and roundhouse of the Greenville, Spartanburg & Anderson railway are practically completed and will be opened within a short time. The machine shop is 75 x 160 feet, of white pressed brick with steel roof, while the car barn is 65 x 200 feet. With machinery equipment the plant is estimated to cost $200,000.

TENNESSEE

KNOXVILLE. — The Sanford-Day Iron Works is having plans prepared for a foundry, 66 x 256 feet.

LEWISBURG.—The Lewisburg Foundry Co. is pushing construction work on its new plant and expects to be ready for the installation of machinery within a short time.

MEMPHIS.—The Memphis Sheet Metal Works, controlled by an Illinois concern, has secured a plant to begin operations.

TEXAS

SAN ANTONIO.—The San Antonio, Uvalde & Gulf railroad has increased its capital stock from $280,000 to $315,000, and is planning to extend its line a distance of 25 miles.

SAN ANTONIO.—The San Antonio Gas & Electric Co. has increased its capital from $1,100,000 to $1,500,000 and the San Antonio Traction Co. from $1,120,000 to $1,400,000.

VERMONT

BARRE.—The Whitcomb Bros. Iron Foundry on North Main street was re-opened recently after a shut-down of two years. F. N. Whitcomb of Barre and H. F. Stanley of Worcester, Mass., head the enterprise and expect to employ about 30 men within a short time. Formerly the plant was one of the largest of its kind in central Vermont.

WASHINGTON

ABERDEEN. — Engineers have estimated the cost of the proposed light and power plant on the Wynoochee river at $900,000.

ABERDEEN.—The city engineer has been instructed by council to prepare plans and estimate for sewer system for South Aberdeen, which covers 1,000 acres.

ANACORTES.—The Anacortes Glass Co. is in the market for a new crusher and other machinery.

CENTRALIA.—The new shops and roundhouse of the Northern Pacific railroad, recently completed, were opened July 1.

KITTITAS.—The city council has decided to appropriate $20,000 for a municipal water system. The source will be Warm springs.

CLE ELUM.—Bids will be received Aug. 2 by William Wallace Sr., for property and plant of Summit Coal Mining Co. Property consists of 80 acres of coal lands with complete mining equipment.

OLYMPIA.—The voters have authorized $100,000 in bonds to purchase a municipal water system.

PRESTON.—The Preston Mill Co. has increased its capital from $160,000 to $300,000.

SEATTLE.—The city has awarded the contract for furnishing one year's supply of electric globes to Pacific Lamp & Globe Supply Co. for $83,000.

SEATTLE.—The Independent Ice & Cold Storage Co. has been incorporated for $100,000 by Charles Erickson, C. J. Sebastian and others.

SEATTLE.—Grant Smith & Co. have been awarded contract by Great Northern Railroad Co. for building two steel bridges and one and one-half miles of snow sheds for $700,000.

SEATTLE.—The contract for building the Cedar River masonry dam has been awarded by the council to the Nettleton-Bruce-Eschbach Co., New York, for $687,110, which is $100,000 below estimate of city engineer.

SEATTLE.—The contract for nine steel barges to be used in coaling men-of-war has been awarded by the navy department to the Seattle Construction & Dry Dock Co. for $190,000.

SEATTLE.—Construction work has started on the new $250,000 assembling plant to be erected in the Lake Union district by the Ford Motor Co., Detroit. The building will be 104 x 200 feet, five stories, of reinforced concrete construction.

SEATTLE.—The Seattle Construction & Dry Dock Co. recently received a contract from the United States navy department for the construction of nine steel barges to cost approximately $190,000. This company also is building the submarine tender Bushnell, costing $937,000.

SPOKANE.—The city council has ordered trunk sewers in a large area that will cost approximately $18,500.

SPOKANE.—The plant of the Spokane Brewing & Malting Co. was almost totally destroyed by fire with a loss of $100,000. It will be rebuilt.

TACOMA.—The Star Iron Works, formerly of Seattle, is having work done at the Municipal dock extension to provide facilities for its new plant.

TACOMA.—The plant of the Tacoma Lumber & Shingle Co. has been destroyed by fire causing a loss of $25,000. The insurance was $12,000.

TACOMA.—The Sperry Mill Co. will build a new mill at Bellingham at a cost not made public. Officers are going over plans with architects now.

TACOMA.—The Sumner Iron Works has been awarded contract for building new mill and partially equipping it with machinery for Wabash Lumber & Shingle Co., at Tenino, Wash.

TACOMA.—The Nisqually Iron Works Co. is to be succeeded by the Nisqually-Russell Power & Machinery Co., a combination of the Nisqually interests with the Russell Wheel & Foundry Co., Detroit. The new company will have sufficient capital to make additions in the way of machinery and buildings.

WEST VIRGINIA

BARBOURSVILLE.—A bond issue of $12,500 to provide for the construction of a water-works system will be voted upon July 9.

FAIRMONT.—The Elkhorn Fuel Co. is planning to begin extensive construction in connection with its plant for developing 300,000 acres of coal land in Kentucky and West Virginia. The company has awarded the contract for constructing 1,000 buildings in connection with plans for a modern mining town in Letcher county, Ky., and will install public utilities. Chas. W. Watson, Fairmont, president.

NEW CUMBERLAND. — The Tri-State Foundry & Machine Co. has been incorporated to manufacture machinery with a capital stock of $50,000.

WHEELING.—The skelp mill of the Wheeling Steel & Iron Co. has resumed operations after being shut down for a period of several weeks for repairs.

WHEELING.—Whitaker-Glessner Co. stockholders, July 9, will vote on increasing capital stock from $5,000,000 to $7,000,000 to enlarge sheet mills at Wheeling, W. Va., Martins Ferry and Portsmouth, O.

WISCONSIN

BRILLION.—The Brillion Iron Works has started work on extensive additions to its plant, including three buildings. The largest of these buildings will be a foundry, 60 x 120 feet, duplicating the present foundry. The other buildings will be a pattern house and warehouse.

EAU CLAIRE.—The Wisconsin Engineering Co. has been incorporated to do a general manufacturing and engineering business; $6,000; by F. McDonough, J. C. Culver and A. Knobel, all of Eau Claire.

FALL RIVER.—The Fall River Light & Power Co. has been incorporated to build and operate a power and light plant; $2,000; by G. D. Milias, M. Milias and A. E. Knaak, et al., all of Fall River.

GREEN BAY.—The Schmidt Construction Co. has been incorporated to do a general construction business; $2,000; by H. Schmidt, A. H. Schmidt and M. Schmidt, all of Green Bay.

GRAND RAPIDS.—The Natwick Electric Co. has been incorporated to manufacture all kinds of electrical supplies and machinery; $20,000; by F. J. Natwick, M. H. Jackson and F. B. Krueger, all of Grand Rapids.

HANCOCK.—The Hancock Light & Power Co. has been incorporated to build and operate a power plant; $5,000; R. H. White, L. E. Wood and J. L. White, all of Hancock.

MADISON.—The bill appropriating $50,000 to assist Columbia and Sauk counties to build a steel bridge over Wisconsin river at Merrimac, costing $75,000 in all, has been made a law by the governor's signature and work will begin on the sub-structure in the fall of this year.

MENASHA.—The Walter Bros. Brewing Co. advises that its proposed bottle house is about half finished. Machinery contracts have been given to Charles L. Kierert Co., Milwaukee. The capacity of the bottle house will be 60 barrels a day.

MILWAUKEE.—The building inspector of Milwaukee has issued a permit to the National Brake & Electric Co. for a $90,000 addition to its foundry.

MILWAUKEE.—The Cordes Heating Supply Co. has been incorporated to manufacture and generally deal in plumbers' supplies; $25,000; by R. Cordes, E. F. Cordes and F. R. Cordes, all of Milwaukee.

MILWAUKEE. — The board of public works, Fred G. Simmons, commissioner, will receive sealed bids until July 9, for furnishing and installing one 12,000,000-gallon pumping engine in the North Point station, municipal water works. The appropriation was made March 31, being for $75,000, and was reported in The Iron Trade Review at that time.

MILWAUKEE.—Specifications for the proposed new bascule bridge at Buffalo street will be completed shortly and bids for the sub and superstructures will be asked by the department of public works some time in July. It will cost $175,000. The work of wrecking the old structure is under way, having been hastened by the damage done by a steamer which collided with the structure.

MILWAUKEE.—A bill of foreclosure has been filed on the Wisconsin Engine Co., Corliss, bankrupt, by Wheeler P. Bloodgood, representing the bondholders. The sale will be held in about one month's time. As reported at the time, the Wisconsin Engine Co. was forced into bankruptcy early in January, only a few days following the death by suicide of Henry Schoellkopf, vice president and treasurer. Lack of working capital brought on the proceedings.

MILWAUKEE.—The Luther Grinder Mfg. Co. has purchased the site and factory building at 285 South Water street for $60,000 and will remodel the structure as well as add several stories. Upon the completion of the work, the company will concentrate its manufacturing operations in this building, abandoning its original quarters in the Stroh building and the branch works established a year ago at 247-253 Madison street. The company has increased its capital stock from $100,000 to $200,000 to provide for the ex-

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CLEVELAND

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PENTON'S BOOK NEWS

CLEVELAND

pansion of the business. The new factory will be 50 x 140 feet, five stories, with basement. The company manufactures hand and power grinders, emery wheels, abrasives, etc.

OSHKOSH.—The Challoner Co., sawmill and power machinery, has just shipped four carloads of sawmill equipment to Hong Kong, China, for use in a new mill erected by Chinese capital in the interior.

RACINE.—The Wisconsin Foundry Co. advises it will make water and air-cooled cylinder castings. A new pattern shop is being built and the company is prepared to handle any kind of pattern work.

SUPERIOR.—The Wisconsin Iron Ore Co., capital $25,000, has been incorporated by Archie McKay, Selma Ericksen and James B. French.

WAUKESHA. — The International Steel Construction Co. has increased its capital stock from $10,000 to $50,000.

DOMINION OF CANADA

ALBERTA

EDMONTON.—The Alsip Brick & Supply Co. will erect a plant in Edmonton at an estimated cost of $150,000.

CALGARY.—P. Burns Coal Mines, Ltd., has been incorporated to operate coal, iron or other mines, $1,000,000; by Patrick Burns, Wilfred Corlet, Frederick S. Albright and others, of Calgary.

BRITISH COLUMBIA

VANCOUVER.—The Credit Foncier Franco-Canadian Co. advises the building it is putting up at Vancouver will be of reinforced concrete, 50 x 120 feet, 10 stories. It will be used as an office building and will have three elevators of a type not yet chosen.

VICTORIA. — The Elevators Supply & Equipment Co. has been awarded a contract for installing a patent lock system in the new provincial jail at a cost of $25,000.

NEW BRUNSWICK

ST. JOHN.—Oil Motor & Mfg. Co., Ltd., has been incorporated to take over as a going concern the business of the Oil Motor & Mfg. Co. now carried on at St. John, which manufactures oil and gas engines, lamps, steam engines, brass, copper and lead goods, etc. The new firm is capitalized at $150,000.

WHITE'S BLUFF.—Tenders will be received until July 9, for the construction of a wharf. Plans and specifications may be obtained from the department of Public Works, Ottawa. R. C. Desrochers, secretary.

NOVA SCOTIA

AMHERST.—The Robb Engineering Co., which has its engines and boiler plants at Amherst, has been completely reorganized with increased capital under the name of the International Engineering Works, Ltd. It will continue to build the horizontal and vertical Corliss engines, single-valve, high speed and English type of vertical compound engines.

KENTVILLE.—Heap & Partners of Montreal have been awarded a contract for the supply of almost three miles of steel pipe for the extension of the water works system.

TRURO.—The Truro Foundry & Machine Co., Ltd., has been placed in the hands of a receiver, and will be taken over by another company which the manager, Mr. Greenough, is forming. The action was taken by the Eastern Trust Co. at the instance of the bondholders.

ONTARIO

BERLIN.—The city council is building an extension to its water works plant at a cost of $100,000, the concrete reservoir in connection with which is rapidly nearing completion. This will be used in case of emergency.

FORT WILLIAM.—The contract for the construction of three tunnels for the city's water works has been awarded to the Moran Construction Co., of Carleton Place, Ont.

FORT WILLIAM. — The National Boiler Works Co., of Superior, Wis., has completed plans for the construction of a plant, 140 x 260 feet.

HAILEYBURG.—The Tough-Oakes Mines, Ltd., has been incorporated with a capital of $3,000,000.

HAMILTON.—A plant to manufacture light steel structures of all kinds will probably be established in Hamilton by the Parkes Construction Co., of North Tonawanda, N. Y.

OTTAWA.—The Simcoe Construction Co., of Simcoe, Ont., has been awarded the contract for the new custom house on Sussex street, Ottawa, at $995,000.

OTTAWA.—The government has under consideration the double-tracking of the Intercolonial railway from Moncton to Halifax. The road will first be improved in respect to grades.

OTTAWA.—Tenders will shortly be called by the Department of Marine and Fisheries for a hopper dredge to cost $400,000, which will be used in the dredging of the North Channel below Quebec.

TORONTO.—The National Steamship Co., Ltd., has been incorporated with a capital of $2,000,000, to build and own vessels of all kinds; by Cawthray Mulock, Gordon Perry, James B. Foote, and others.

TORONTO.—The Fair Canadian Ventilator Co., Ltd., has been incorporated to manufacture and deal in ventilators and all similar appliances; $1,000,000; by Harry Riley, Donald A. McRae, and Harold E. McKitrick.

TORONTO.—Contracts have been awarded by the Dominion Government this week to the Canadian Stewart Co., Chicago and Montreal, for the erection of the new Union station for $2,500,000. The construction of extra dockage facilities will raise the sum to $5,000,000.

QUEBEC

MONTREAL.—McCuaig Bros. & Co., who contemplate the erection of a large generating plant, have interviewed the civic officials of Granby, Que., with the object of disposing of 2,000 horsepower there.

MONTREAL.—Radio Electric Co. of Canada, Ltd., has been incorporated to manufacture and deal in all kinds of machinery, including telephone and telegraph apparatus; $200,000; by Charles A. Pope, Gregor Barclay and William B. Scott.

MONTREAL.—Drummond, McCall & Co., Ltd., have been incorporated with $1,000,000 capital to carry on the business of iron and steel makers, mechanical engineers, etc.; Arthur W. P. Buchanan, K. C.; Thomas S. Owens, Richard Wilton and others of Montreal.

MONTREAL.—Shareholders have approved of the plans submitted by the directors for the merger of the Richelieu Navigation Co. and several other steamship lines. The new company will be known as Canada Transportation Lines, Ltd., with a capitalization of $25,000,000.